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THE PROCESSES OF CREATING SOLUTIONS IN THE CONTEXT OF UNCERTAINTY

CASE STUDIES OF COMPANIES CREATING SOLUTIONS
IN RELATION TO SUB-SAHARAN AFRICA

BY
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DENMARK

The processes of creating solutions in the context of uncertainty:
case studies of companies creating solutions in relation to
Sub-Saharan Africa.

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access²innovation

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1 Preface

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A special gratitude I extend to the commercial businesses that have contributed directly and indirectly in the work related to this thesis and to my work in access2innovation in general: Remote Sanitation, Sky-Watch, SystemTeknik, Waterbus as mentioned in the thesis, and Thise Mejeri, Urtekram, Aurion, Novozymes, Rootzone, Bressendorf and FanMilk who have given inspirations.
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And to my wife, Juliet Butler, I thank you and love you for putting up with me throughout these estranged years of research. March 2017

2 Summary

The following is the summary in English. A summary in Danish will follow immediately after in section 2.1 (det danske resume følger umiddelbart efter dette engelske resume – se section 2.1).

The overall position of this thesis is set in the context of low income countries or developing countries such as those found in Sub-Saharan Africa; e.g. Kenya, Uganda and Tanzania. In Denmark, there is a growing recognition that these developing nations are nations in economic growth, and in comparison, to Western markets growth rates should translate into increased commercial interests by businesses based in the Western Economy e.g. Danish companies. However, there are no signs of any significant increase in business activities by Danish companies in such markets, which leads to a discussion of whether such companies might extend their field of interest if some sort of assistance could be afforded to them.

Concurrently these developing markets are still struggling with significant complex social problems of poverty and disenfranchisement, as the overall economic growth of many of these nations do not seem to significantly benefit those that are at the bottom of the economic pyramid.

These nations would seem interesting from a commercial standpoint due to strong growth rates, but at the same time these are nations with significant challenges still. However, there may be opportunities for leveraging commercial interests *and* help solve complex social problems there.

There are different initiatives to help interested actors of companies, NGOs and others to find a path or model of involving companies in the pursuit of growth and profit, and at the same time solve complex social problems. Government programs, such as the Danish DANIDA, do make such efforts, but they are struggling with finding a working model. A new approach to utilising industry as a lever for solving social problems is the research-based organisation 'access2innovation'. The access2innovation initiative has since 2007 experimented with forging and facilitating collaborations between NGOs, Industry and Research to utilise the local knowledge and network of NGOs, the capability for innovation and capacity to disseminate new technologies of Industry and state-of-the art knowledge of Research, in order to help minimise risk and alleviate under-researched fields of interest. These partnerships have been implemented in (as of 2007) 8 different partnerships of companies, NGOs and research, which resulted in four new business ventures, of which two are still in operation (as of 2016). It is still too early to estimate the viability of the companies from a profit standpoint, and still too

early to gauge the social impact of these, but in terms of establishing the companies and remaining in operation still is deemed a success from the access2innovation point of view.

The initiative access2innovation has then had some success in facilitating network-based cross-sector collaborations, but there were issues of concern, which fostered a need to research particularly the behaviour of companies; a need for more research, which initiated the work behind this thesis in the year 2011.

A general concern was that the help given by access2innovation to the partnering companies seemed to have unclear effects. One particular tool, the Business Model CANVAS (Osterwalder et al 2010), which was selected based on research revealing (Prahalad 2009, Kubzansky 2012) that a business model approach to markets such as those in Sub-Saharan Africa, would be more likely to succeed than a conventional model of doing business where actors would bring predetermined products to the markets in Africa and simply attempt to sell them there. A conventional approach would deem to be less successful as the way of doing business in e.g. Europe is deemed to be potentially very different than in e.g. Tanzania. Companies then are, through access2innovation, recommended to learn the 'business model approach' of business.

However, when investigating the research conducted of access2innovation and the involved partners from 2007, none of the companies adopted the business model approach, or rather, the companies did not behave in a manner that was expected. Essentially, when conducting projects in Sub Saharan Africa it was becoming apparent that the participating companies were not well understood.

To learn what it is companies do when trying to do business in Sub-Saharan Africa, when working within access2innovation, is the main topic of this thesis.
The output of the research conducted for this thesis is primarily focused on helping access2innovation evolve with new tools and approaches so that the facilitating efforts become better and ostensibly lead to better opportunities for solving complex social problems in developing countries such as those in Sub-Saharan Africa, through commercial activities and profits. Secondary benefits may be found in this research for other similar initiatives centred on commercial instruments for solving social problems. Tertiary benefits may be found in the extensions of the theories and literature utilised in this thesis.

The thesis then contributes to the work of access2innovation by expanding an understanding of companies as they partake in the access2innovation facilitated activities.

The main research focus then becomes:
To understand the processes of commercial actors attempting to develop solutions in the context of uncertainty

The research conducted here is based on action research, and structured by case study approach. Three different types of cases are selected and investigated to discover what it is these companies do when attempting to create solutions. The analyses attempt to reach beyond activities only related to access2innovation, to learn what else companies are doing, and if these activities may be valuable to learn for future projects.

The theoretical perspectives drawn in to help the investigations are Process theories of Sense making and Enrolment in particular, as the researcher has attempted to follow the actors as they act (make sense) and enrol others, and to do so a vocabulary of process must be explicated as well as that of sense making.

To help discuss the setting of the activities (Sub-Saharan Africa) the researcher has attempted to find another way of describing the contexts, which led to the interpretation of the term *uncertainty*, as an expression of foreign actors seeking commercial opportunities must expect conditions to be unfamiliar. This means actors must expect to reach beyond their core business to identify the institutions that are crucial for the company, and find means to create institutions if needed. Sense making and Enrolment and Uncertainty are joined to form a vocabulary that is used to sensitise the collected data. The primary perspectives highlighted for the subsequent analyses are: Sense Making and Enrolment. Sense Making discusses the perception of the actors in terms of uncertainty, and how actors mesh interests, activities and actors to enact that which makes sense to them. Enrolment is deemed an important aspect of creating solutions, as actors, human and non-human, make up what will become the solution. Within the discussions of Enrolment, the Concept of Blankness is highlighted as a perspective that fits very well with the context of Uncertainty. The correlation is found in the need to alleviate uncertainty is akin to processes of learning, and by learning it is implied that the actor who attempts to create a solution, much seek knowledge. And Blankness is a way to describe how a central actor is blank and allows others to inscribe meaning and attributes to the central

actor. Sense Making and Enrolment may be discussed as separate entities but they are intertwined, as will be revealed in the thesis.

The overall theme of access2innovation in theoretical terms is *innovation*, as the solutions needed to solve social problems through profits, are linked to innovation (giving rise to the name 'access2innovation'). However, for this particular thesis the academic understanding of innovation is assumed and not expanded.

The findings of the case analyses lead to discussions of what activities actors go through in partnerships with others in the attempts of creating solutions, and a particular interesting issue is related to the *relations* of the actors. Where processes of innovation would suggest that actors with no dominant logic or boundaries or context would have greater opportunities to explore solutions thus leading actors to create solutions, attract funding to help fund activities; e.g. experiments with users, the evidence afforded here seems to suggest otherwise.

The actors that seem to be able to create solutions are those that are constricted in movement somehow, either by having investors who limit the scope of business exploration or by the driving actors themselves limiting their attention on relatively narrow ideas.

The first conclusion suggests that actors looking to places like Sub-Saharan Africa should not be without boundaries or context, in other words, actors should enter into the process of creating solutions with some narrower idea of what it is that they want to do, or be restricted in exploration by their partnerships or both.

The second conclusion however hopes to lift a new discussion of the *type* of relation or context of these actors, as these seem to be important. The actors who seem to succeed in their endeavours are linked to relations, which are strong in the sense that they support the activities, but are also sufficiently loose or malleable or moveable, so when the processes of enrolment lead to experiments and validation activities show that the original ideas may be flawed, even significantly flawed, the relations are able to change and move along with the business. For instance, where one of the cases in this thesis started out by making small-scale remotely controlled helicopters to survey fields thought to contain landmines, and the helicopter was created by combining existing technologies, an experiment showed that the whole idea was fundamentally flawed and the whole business model would have to be changed quite significantly (the company could in other words not get by, by assembling known technologies, they would have to develop completely new technologies, which in turn would suggest a significantly different type of

business operation). But the investors of the company were able to change and move along with the new realisations and remained investors but with a different business idea in mind.

An important point of discussion that has emerged during the case analyses, which seems to have significant impetus on processes of creating solutions in the context of uncertainty, is the *nature* of funding. Commercial actors seem to fare better where relations, e.g. investors, are able to adapt to new knowledge acquired through experimentations.

Another conclusion was reached in that there are relatively clear points or stages of the processes that actors go through: exploration, blueprinting and validation, but simultaneously the human actors of the companies studied here (that are able to create solutions) have activities that are ongoing – activities of Networking. And Networking seems to exceed the processes of creating a particular solution. In other words, the human actors enrol other actors as exploration of actors with no preconceived notion of what these processes will lead to. In yet other words, these processes seem *not* to be initiated because they are thought to yield anything particular – they are processes of exploring. An expression of this phenomenon has been attempted her: that companies "also build relations to others *before* these relations are known to be useful".

In the efforts of trying to understand how companies develop solutions in the context of uncertainty, these processes have been identified:

- The processes of creating solutions in the context of uncertainty, are based on *learning*.
- This requires the constellations of actors to be ever changing, with the adding and subtraction of actors over time; i.e. to experiment with actors (not only products).
- Other actors are needed as part of learning, experimentation and validation processes, thus the processes of Enrolment become important, as the outcome depends on the actors that are enrolled.
- The central actors that offer *Blankness*, which allow other actors to inscribe attributes, are those that learn new things and help clarify what might work and might not, and adding and subtracting actors over time, ostensibly leading to the alleviation of Uncertainty.
- The important actors are those that are strong enough to affect the direction of the company's processes, but moveable enough to change in relation to the knowledge created through learning (experiments etc.)

2.1 Resume – på dansk

Afhandlingens overordnede kontekst er lavindkomstlande eller udviklingslande såsom de man finder syd for Sahara; f.eks. Kenya, Tanzania og Uganda. I Danmark er der en voksende erkendelse at disse lande har en anseelig økonomisk vækst sammenlignet med vestlige økonomier, hvilket burde betyde at bl.a. danske virksomheder fatter interesse for disse markeder og forsøger at indtræde på disse. Men der er ingen stærke tegn på at danske virksomheder forsøger sig, hvilket har ført til diskussioner af om danske virksomheder kan supporteres på nogen måde for at fremme deres tilstedeværelse i disse vækstmarkeder.

Det forholder sig dog således at disse markeder stadig har udfordringer og signifikante komplekse sociale problemstillinger såsom fattigdom og befolkninger der står med begrænset indflydelse på deres egen tilværelse. Desuden ser det ud til at væksten, som er registeret i landene, ikke ser ud til at gøre gavn for de som befinder sig nederst på økonomiske pyramide.

Derfor kunne disse lande virke interessante fra et forretningsmæssigt synspunkt, pga. de høje vækstrater, men det er lande med signifikante udfordringer. Men der er muligheder for at undersøge hvorvidt virksomheder kan søge profit og samtidigt løse komplekse sociale problemer.

Der findes forskellige initiativer der er skabt til at hjælpe virksomheder, NGOer og andre med at finde en model for at skabe vækst og profit og samtidigt løse sociale problemer. Statslige programmer såsom det danske DANIDA udfører sådanne assistancer, men har svært ved at finde en egnet model. En anden er det aktionsforskningsbaserede 'access2innovation'. Denne organisation har siden 2007 eksperimenteret med at skabe og facilitere partnerskaber mellem civilsamfundet, industri og forskning. Civilsamfundet anses for at kunne bidrage med lokalkendskab og netværk, virksomheder anses for at have kapacitet og evner til at innovere nye løsninger og forskning kan bidrage med den nyeste viden. Disse aktiviteter har (siden 2007) ført til skabelsen af 8 nye partnerskaber mellem industri, civilsamfund og forskning. Af de otte blev fire etableret som virksomheder, hvor to af disse stadig er i drift (per 2016). Det er for tidligt at vurdere disse virksomheders formåen mht. at løse sociale problemer, men idet de stadig er i drift anses de alligevel som en succes for access2innovation programmet.

Initiativet access2innovation har haft nogen succes med at facilitere netværksbaserede tværsektor partnerskaber, men der er stadig udfordringer, som har givet belæg for at undersøge særligt hvordan virksomhedere agerer i disse partnerskaber, hvilket har affødt forskningen bag denne afhandling (som påbegyndtes i 2011).

En udfordring har været at den hjælp givet af access2innovation til virksomhederne, ikke synes at have nogen klar effekt. Et af de værtøjer som har været anvendt i faciliteringen er Business Model CANVAS (Osterwalder et al 2010), som er en forretningsmodel tilgang, som forskning har vist er den bedst sandsynlige tilgang til markeder som de i lande syd for Sahara (Prahalad 2009, Kubzansky 2012), som adskiller sig fra traditionelle forretningsformer med primært køb og salg af varer og ydelser. Litteratur viser at en traditionel tilgang ikke forventeligt vil lykkedes i eksempelvis Tanzania, hvorfor access2innovation forsøger at påvirke aktører til at adoptere en forretningsmodeltilgang.

Men ingen af virksomhederne som er blevet studeret siden 2007 har adopteret denne tilgang, hvilket giver anledning til at undersøge hvad det så er de gør når de skaber løsninger, hvilket er essensen med denne afhandling.

Resultatet af afhandlingen har til hensigt primært at styrke aktiviteterne i access2innovation, og sekundært at bidrage til andre diskussioner af faciliterede programmer, der er skabt med henblik på at anvende kommercielle instrumenter (profitsøgning) i udviklingslande med henblik på at løse sociale problemer. Tertiært vil der blive drøftet nye videnskabelige diskussioner af teorier og litteratur, som er kommet til syne.

Det overordnede forskningsspørgsmål er:
Hvordan udvikler aktører løsninger i konteksten af usikkerhed?

Forskningen er baseret på en aktionsforskningstilgang med en casestudiestruktur af analyserne. Der er udvalgt tre cases som er forskellige og giver forskellige synspunkter på processen med at skabe løsninger. Analyserne forsøger at række udover de aktiviteter som kun er direkte forbundet med access2innovation, og derfor søger at forstå hvilke andre aktiviteter virksomhederne foretager og om disse kan være værdifulde for nye projekter.

De teoretiske perspektiver som danner grundlag for analyserne er procesteori og sense making, hvorved forskeren forsøger at følge aktørerne over tid for at lære hvordan de skaber mening og organiserer løsninger. Teoriarbejdet har haft til formål at identificere et vokabular som menes i stand til at sensitivere dataet og derved forsøge at give mening til de aktiviteter som aktørerne udfører.

For at beramme forskningen således at den rammer mere præcist ind i konteksten af lande syd for Sahara, udvikles begrebet *usikkerhed*. Begrebet dækker over konditioner hvor aktører ikke kan nøjes med at lavere

kalkulerede risikovurderinger, såsom er almindeligt i hjemmemarkederne, men må griber ud over kerneforretningen for at sikre sig at de komponenter der er afgørende for at forretningen vil virke, faktisk er til stede eller kan skabes. Disse perspektiver indeholder og anvender en række forskellige begreber, hvor nogle er trukket særlig frem, idet de er fundet særligt egnede til at sensitivere data. Disse er overordnet Sense Making (meningsdannelsesprocesser) og Enrolment (indruling/tiltrækning af aktører). Sense making er bl.a. en diskussion af hvordan aktørerne opfatter usikkerhed og hvordan de sammensmelter aktører, interesser og aktiviteter. Enrolment er studeret idet processerne med at tiltrække andre aktører har indflydelse på alle andre processer. Særligt omkring Enrolment drøftes begrebet Blankness (blankhed) som en særlig vigtig egenskab, og endda meget vigtig i konteksten af usikkerhed. Blankness handler om at en aktør skal være tilstrækkelig blank, hvorved andre aktører kan se sig selv ind i denne – der gøres plads til at andre aktører får indflydelse. Herved kan nye løsninger skabes og også usikkerhed nedbrydes. Validering er et eksempel på den del af indrulningsprocesserne, hvor aktørerne søger viden om deres ideer er holdbare og om der skal foretages ændringer. Disse begreber er hver især fundet særligt vigtige i processer hvor virksomheder søger at minimere usikkerhed gennem læring, som kræver at andre aktører tiltrækkes på en måde hvor disse andre aktører får rum til at påvirke virksomheder – med andre ord, aktører tiltrækkes som en del af læringsprocessen. Og læring er fundet til at være kernen i at minimere usikkerhed. Dette har også konnotationer til begrebet innovation, som anvendes implicit og udvikles derfor ikke i afhandlingen.

Resultaterne af analyserne viser at en række af processerne omkring indrulning af aktører, validering m.m. er nyttige til at belyse processerne, men forholdene mellem aktørerne synes at være vigtige. Det kunne antages at innovationsprocesser ville have gavn af at en virksomhedsaktør ikke har andre aktører til at begrænse sig. Altså, at virksomhedsaktøren har frit råderum over hvad der skal prøves, men resultaterne viser det omvendte.

Kun de aktører der formår at gå ind i innovationsprocesserne med en form for begrænset syn på hvad de vil skabe, formår at lære gennem processerne om disse løsninger er egnede eller ej – når man har en ide om hvad man vil teste, da kan man teste den. Og når disse processer viser at den intenderede løsning ikke er mulig, der skal disse løsninger (aktører) trækkes ud og fjernes, hvorved udforskningen af alternativer kan påbegyndes.

De aktører som ser ud til at formå at skabe løsninger, er de som er begrænsede i forhold de muligheder de udforsker, enten ved at have investorer som begrænser fokusområderne, eller ved at de menneskelige aktører som driver udviklingsprocesserne selv begrænser fokusområderne.

Den første konklusion er derfor, at de aktører som søger kommercielle muligheder i land syd for Sahara, bør have begrænsende aktører og kontekstbestemmede aktører som en del af processen. Med andre ord, bør virksomheder søge muligheder med en relativt begrænset ide om hvad de vil skabe eller være begrænsede af kontekst eller partnerskaber i hvilke forretningsmuligheder som udforskes, eller begge dele.

Den anden konklusion søger at fremme en diskussion af typen af relationer eller kontekst af disse aktører, idet dette synes at være vigtigt. De aktører som synes at være i stand til at skabe løsninger har relationer som er stærke. De er stærke i den forstand at de støtter op om og definerer aktiviteterne, men de er ikke mere stærke end at de er løse og bevægelige. Når eksperimenter med ideer viser at ideerne er fejlagtige, da skal relationerne være i stand til at ændre sig med forretningen (versus at stå fast). Et eksempel findes ved virksomheden Sky-Watch der oprindeligt have en ide om at skabe en fjernstyret helikopter med et kamera på til at besigtige områder antaget til at have landminer. Helikopteren var forestillet at kunne blive fremstillet ved at sammensætte den med eksisterende teknologier, men gennem eksperimenter viste denne opfattelse sig ikke at være holdbar – virksomheden måtte ændre sin forretningsmodel og strategi betragteligt. Den nye forretning måtte indeholde processer som fokuserer på udviklingen af egen teknologi, som er ganske betragteligt en anden forretning. Det er også en forretning som kræver ganske betragtelige investeringer, hvorfor det har været afgørende at de som finansierer aktiviteterne har været i stand til at flytte sig i takt med ny viden bliver skabt. Med andre ord bør nye diskussioner omkring løsningen af sociale problemer i konteksten af usikkerhed med kommercielle instrumenter også søge at skabe bedre forståelser af *naturen* af finansiering af sådanne processer.

En yderligere slutning er blevet draget fra studierne i afhandlingen. Der synes at være ret klare processer som aktørerne gennemgår i forbindelse med udviklingen af løsninger: eksplorerer, blueprinting og validering, men der synes at foregå vigtige aktiviteter sideløbende med disse; networking. Networking som er fundet i data, men ikke studeret indgående, synes at pege på at en del af afsøgningen af muligheder også indeholder ikke veldefinerede interaktioner med aktører som ikke umiddelbart er kausalt forbundet med de løsninger som udvikles. En præliminær konklusion er en del af de processer, der er direkte forbundet med udviklingen af løsninger, indeholder processer som ikke er. Sådanne networking aktiviteter kan muligvis forstås som processer, der *ikke* har umiddelbar relevans for løsningen, men som *kan* have relevans på et senere tidspunkt. Networking aktiviteterne ser ud til at være aktiviteter hvor de virksomheder, som er studeret her, søger nye kontakter og derfor også søger viden og inspiration som først senere kan, men ikke nødvendigvis, få indflydelse. Et udtryk som er foreslået her til at beskrive

dette forhold er, at "virksomhedsaktører også udvikler netværksrelationer *før* de skal bruge dem".

I forsøget på at undersøge hvordan virksomheder udvikler løsninger i konteksten af usikkerhed, da er følgende processer og forhold blevet identificerede:

- Processerne med at skabe løsninger er baseret på *læringsprocesser*.
- Disse kræver konstellationer af aktører som er i forandring, hvor aktører tilgår og fratræder over tid, hvilket kan kaldes processer, hvor *aktører eksperimenterer med aktører*.
- Valideringsprocesserne er vigtige i disse læringsprocesser, og validering kræver involvering af andre aktører, hvorfor indrulningsprocesserne bliver vigtige.
- De centrale aktører, som søger at tiltrække andre aktører, bør fremstå med en form for *blankhed*, hvor disse andre aktører får lov til at indskrive mening og attributter ved den centrale aktør, hvorved de bliver tiltrukket. Og dette minimerer, over tid, usikkerhed.
- De vigtige aktører er desuden de aktører, som er stærke nok til at påvirke processen på en begrænsende måde, men ikke stærkere end at de kan forandre og flytte sig i takt med tilegnelsen af ny viden.

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Acronyms
AAU: Aalborg University
ANT: Actor-Network-Theory
Bop: Base of the Pyramid
CSR: Corporate Social Responsibility
CSV: Creating Shared Value
DCA: Danish Church Aid
DRC: The Danish Red Cross
GIM: Growing Inclusive Markets
ICI: International Centre for Innovation, Aalborg University
MDG: Millennium Development Goals
MIT: Massachusetts Institute of Technology
MNC: Multi-National Corporations
NDEU: Northern-Denmark EU Office
NGO: Non-governmental organisations
OECD: Organization for Economic Cooperation and Development
SME: Small- and medium sized enterprises
UCCCU: Ugandan Crane Creamers Cooperative Union
WSWP: The Wharton Societal Wealth Program

3 Introduction

Chapter abstract: The following chapter includes a description of the research context of development aid and market oriented initiatives to development, the action research based initiative access2innovation, the practical challenges that have spawned the overall research agenda, a general problem field followed by a distillation of the problem field into a narrow perspective for this thesis.

3.1 Changes in development paradigms

The research for this thesis is seated within a larger discussion of development aid[1]. Regions of the World are in different stages of development, and countries such as those found in Sub Saharan Africa are largely under-developed with widespread poverty and complex social challenges. In recent years, aid paradigms have changed from Government and Non-Government Organisations (NGOs) as the main drivers of development, to also include private sector commercial enterprises as important actors, which gave birth to the term *market-driven approach to development*. A market-driven approach is a perspective that has been suggested as an alternative approach to increasing development by utilising the mechanisms of commercial businesses as part of solving complex social problems (Prahalad 2002, London and Hart 2004, Kandachar 2008).

There are however other factions of this discussion concerned with the idea that markets might not be the best drivers, and actors should attempt to *drive the market* (market driving) (Jaworski et al 2000). The distinction of market driven versus market driving is that 'market driven' suggests the demands of markets might pull actors in to supply the demand from which prosperity may ensue (a reactive approach), where 'market driving' suggests that outside actors may influence the structure and players in the market to enhance the competitive position of a company (a proactive approach). Narver et all (2004) suggest that such market orientation perspectives deal with responding to existing needs, where there are opportunities to discuss the activities of unearthing latent needs.

Market-orientation discussions have thus included these perspectives as matters of interest in any markets or regions of the World, but to contextualise the idea of markets as understood in places like Sub Saharan Africa, please read this clarification.

> In interest of clarification, the term 'market' can be utilised with different meanings, and in this thesis, it is used in the widest sense of the word. A market could mean that a certain customer segment is already available in "the market" to purchase goods and services, i.e. the market already

[1] Development aid as well as the other concepts drawn forward in this introduction will be discussed in the following sections.

exists. A 'marketplace' refers to a location or institution where certain items or services are for sale e.g. stock market, fish market etc.

Another way of discussing 'markets' is to use the term Emerging Markets, or Developing Markets, or New Growth Markets and others. All of these tend to talk about a more macroeconomic perspective vis-à-vis countries where politicians, researchers etc. discuss the potential for increased commercial interests.

Another distinction is that of 'formal and informal markets', which is a distinction that allows for discussing commercial or opportunistic behaviours in areas, where actors are either formally acting (vis-à-vis registered companies) or informally where actors act as trading goods and services beyond the formal channels. An informal sector could for instance be the collection of plastic waste products by private persons who sell this waste to some other actor who trades it to something else and so on. Informal markets are outside of government purview and are therefore do not contribute with tax. Bosch and Esteban-Pretel (2012) suggest that upwards of 70% of a workforce in developing nations might be informally employed, which leads to suggest that market dynamics might not be transparent.

In this thesis, the different expressions are used interchangeably, however one term is paramount, and is linked to the later discussions of *uncertainty*: there *are no markets* in a strict sense when discussing Sub-Saharan Africa. There are only emerging markets or markets that are to be *created* (explained in greater detail in section 3.3.6). Simanis (2010) discussed this at length claiming that there are indeed plenty of *needs* to be found in developing economies, but that does to equate to there being any *demand*.

For this thesis at no point, unless explicitly stated, does a reference to a 'market' refer to an actual or specific market e.g. a particular product or service, but simply to suggest that the geography and overall economic growth of a country would suggest that commercial opportunities might be of interest also for foreign enterprises. And the only argument so far that Sub-Saharan African regions are interesting in commercial terms, is the apparent and relative large economic growth measured there in terms of GDP[2]. A growth rate that has spawned many ideas of how to exploit this for commercial purposes, and indeed has spawned what in

[2] A World bank analysis:
https://www.worldbank.org/content/dam/Worldbank/GEP/GEP2015a/pdfs/GEP2015a_chapter2_regionaloutlook_SSA.pdf

the above has been coined a 'market-driven approach' and 'market driving approach' to solving poverty issues, as opposed to the more prevailing 'donor-driven approaches' or 'aid paradigms'. And this alternative perspective on development is another way of expressing a paradigm where it is the procurement and sales of goods that define what is supplied and demanded in any given situation, and not politically regulated conditions of how and what can or cannot be bartered, sold or other. In section 3.3.6 the idea that *markets do not exist* in Sub Saharan Africa will be exemplified, and this is important as it frames the ontology of this researcher (an ontology which is again expanded in section 4.3.1) and the work that has gone into this thesis. Thus, the thesis makes no contribution of driven, driving or making of markets as such, but only utilises the more abstract *market–orientated* approaches to development. Thus, the term 'market' is understood in a more general sense, than in a specific sense, but please note that the term 'uncertainty' (will be unveiled in the theory section 4.1), which is at the heart of this thesis, is linked to a geographical orientation of Sub-Saharan Africa – and certainly not to specific products or services or supply and demand.

Table 1: Thoughts of clarification
Source: This researcher's own remarks

The purpose of even discussing the role of business in development is that the mechanics of business – buying and selling goods and services – can lead to jobs and the increasing of wealth and prosperity, may be a better vehicle for *sustainable development*, than the aid approach to development.

Studying literature that deals with the context of market-orientated approaches to Sub Saharan Africa is difficult, as there are very few positive and documented stories of such commercial approaches actually helping in solving any complex social problems, or even succeeding in such difficult markets. In effect, literature is largely *conceptual*, which is not to say that these concepts are wrong or defunct, only that it is still not known if the concepts are truly viable.

That is however not to say that there are no commercial success stories in practice, when looking to Sub Saharan Africa. Fanmilk[3] in West Africa is arguably a significant success story. The company had tough beginnings back

[3] http://www.fanmilk.com

in 1960 and it took the better part of 10 years (interview with FanMilk CEO in 2011) to get a production going and more than two decades to refine their business practices. Coca Cola[4] and other Multi-National Corporations (MNCs) have catered to such markets for decades and many are profitable. Where most of available case stories of MNCs targeting emerging markets then show commercial success, but are less inclined to clarify the *processes* of achieving the success and also lack a clear recognition of the *social impact* of these cases. The commercial approach to solving complex social problems then is at a conceptual stage in scientific terms, and delving through the different studies reveal very little in either the *processes* or the abilities of these approaches in *solving complex social problems*.

The conditions of Sub Saharan Africa have changed significantly over the years and it is still unclear what the processes of accessing or creating such markets are, in particular for smaller business ventures than Multi-National Corporations.

Historically poverty alleviation, increasing the quality of life and mitigating the effects of being disenfranchised in developing countries such as those in Sub-Saharan Africa, has been a task especially performed by OECD countries ever since the Marshall Plans after the Second World War (Soestra 2004, Williams 1998), and Government programs in combination with Non-Governmental Organisations (NGOs[5]) in particular support nations in need through *foreign aid*. The aid paradigm has two main perspectives;

a) aid given in relation to loss of life, conflicts, natural disasters or similar, is referred to as *Humanitarian Aid* and
b) aid given as input to further the development of poor nations, is referred to as *Development Aid*[6].

Humanitarian Aid, which is not a part of this thesis, as a support system seems to have the desired effect; e.g. help administered after the earthquakes that seriously affected Haiti in 2010 and Thailand and neighbouring countries in 2004. But in terms of *Development Aid* there are discussions about the

[4] http://www.howwemadeitinafrica.com/author-qa-coca-colas-success-in-africa-and-the-promising-construction-sector/50636/

[5] … or according to Fowler (Striking a Balance, book, 1997) the special organisations investigated when discussing development and non-governmental organisations, should be understood as non-governmental development organisations or NGDOs – but as such organisations are not discussed at length, the term 'NGO' to cover all organisations with a development agenda that are not government or industry..

[6] http://humanitariancoalition.ca/info-portal/factsheets/humanitarian-and-development-aid

actual effect of this approach (Andrews 2009, Birdsall et al 2010, Minoiu and Reddy 2010).

In the 1980s awareness about the poor, hungry and desolate of the World and their need for help, led to the formulation of goals as formulated by the United Nations. The Millennium Development Goals (MDG[7]), which were part of the United Nations Millennium Declaration[8] of the year 2000 sought to address poverty, hunger, illiteracy, rights, gender issues and other major challenges of the World by enrolling all sectors of society to contribute to the transformation of poverty, illiteracy, hunger etc.

Within the declaration of the UN a distinguished effort of considering *commercial businesses* as part of future solutions was offered as part of Development Aid. The UN and the Growing Inclusive Markets program (GIM[9]) highlight many business cases where *social* and *commercial* value was generated by thinking commercially and inclusivity with users as part of solutions. Thinking commercially is a new way of considering how help can be provided more *sustainably*.

For almost two decades the movement towards an alternative approach to the aid paradigm has been on the rise (Mawdsley et al 2014). The main drivers of conventional development aid are typically governments from more affluent countries, with hundreds of different approaches to alleviate poverty (Selsky and Parker 2005). With the re-emergence of the Base of the economic Pyramid idea (BoP) (Prahalad 2002, London and Hart 2004, Kandachar 2008) where the 2,5 billion people on the planet that live for less than USD 2 a day, are perceived to be potential markets not yet served by commercial companies, a new direction for development has taken considerable shifts from seeing business as *relevant* for development, to a paradigm where businesses are thought to be *crucial* for development.

The BoP paradigm (as an attempt to replace the old aid paradigm) submits that by *innovating business models* where the poor are able to gain access to value adding technologies they would stand a better chance of lifting themselves out of poverty (Prahalad 2009). The concept proposes win-win solutions where foreign businesses gain access to new markets, and the poor gain access to value adding technologies. Gaining access to these markets is then understood as a process where actors should *work together across sectors* (the idea of access2innovation which will be explained in detail later) such as NGOs and their users, research and government where knowledge

[7] http://www.un.org/millenniumgoals/

[8] http://www.un.org/millennium/declaration/ares552e.pdf

[9] http://www.growinginclusivemarkets.org/

can be obtained about market needs, networks, local partners, distribution etc. (Doh et al 2010, Kandachar and Halme 2008, Prahalad 2002).

As discussed earlier the market oriented approach to development then is derived from the perspective of feeding underserved markets with new technologies and business models, which generates growth from within, as opposed to the aid paradigm which suggests that change will come from outside or foreign help (Calderisi 2006).

But delivering these technologies have hinged on the ability of the businesses, which manufacture them, to earn a profit or else they will not be interested in delivering these technologies. This has pushed the aid agenda into considering a more commercial understanding to development.

The role of commerce in development is multi-facetted and includes perspectives of the lack of access to technology as contributing to the lack of ability to create wealth in developing countries (Lall and Pietrobelli 2002), but also lack of financing of SMEs (OECD report[10]), poor electricity and infrastructure (Calderon and Serven 2008) all of which makes it difficult to create the foundations for development as compared to the Western economy.

As an example of commercial approaches to development, The Danish Government developed its Development Aid program, DANIDA, to include very specific *commercial instruments* to help Danish commercial actors gain a foothold in places such as Sub Saharan Africa, with the purpose of contributing to local development. The governing paradigm of this development agency has been based on the idea of *job creation*, i.e. by lifting local businesses to higher standards and competitiveness they become more capable of creating value and growth from which an increase in demand of labour may occur[11]. And from creating more local jobs, locals may pull themselves out of poverty. The main component of the DANIDA programs lingers on the requirement of Danish businesses to partner with local businesses, if DANIDA is to be able to support the projects. DANIDA then performs tasks with the goal of development, and not specifically with the goal of helping Danish businesses access developing countries. DANIDA has by the nature of being part of the Danish Foreign Ministry, operated out of the Danish Embassies in various developing countries and have already been in

[10] www.oecd-ilibrary.org/docserver/download/5kzsw67mfq0n.pdf?expires=1411549972&id=id&accname=guest&checksum=4F0A5BB417531B7C293BCA8CFDACF156

[11] http://um.dk/en/danida-en/goals/government-priorities---danish-development-assistance/priorities-2015-2018/

dialogue with local businesses in an attempt to short-list potential partners for the vying Danish companies coming in. When the Danish companies can document their intended business model, the project scope and scale, and signed partnership agreements with a local business, they become eligible for financial help (in various forms) from DANIDA. This perspective of assisting businesses has over the years had very limited results in both commercial success of Danish companies, as well as social impact locally in developing countries.

Commercial perspectives on development also include discussions of the utilisation of commercial business as levers for growth, which is linked to the idea of *scale*, and in the case of Porter and Kramer, as will be elaborated in the following, scale is difficult to reach through governments (and civil society).

The problem of reaching ***sustainable*** development is 'scale', and commercial businesses exist because they can scale. Porter and Kramer (2011) offered their Creating Shared Value (CSV) perspective, as a new perspective of how business should consider solving complex social problems, not for the sake of improving a Corporate Social Responsibility (CSR) image, but because it makes good rational business sense. The CSV concept is wider than a discussion of scale, however scale is at the heart of even considering a market-driven approach. If commercial businesses can earn a profit by solving social challenges they would, theoretically, do it. And if businesses succeed in doing so, they have the capacity to reach many more communities than any other type of organisation – businesses in other words are good at scaling. It sounds intriguing, but Porter and Kramer (2011) say that businesses must expect to change their business models somewhat, but essentially businesses should be able to do what they have always been good at - to scale.

Civil society and government development programs, according to Porter and Kramer, have difficulties in reaching scale as they are bound by the funds they are given, and such efforts are in principle not created to generate profits (Porter and Kramer 2011). As such projects undertaken in civil society and government programs tend to be geographically focused on single communities with a narrow perspective, often reliant upon donor funding, which struggle with leveraging projects to a point where they can become buoyant (Busiinge 2008). If funding stops, so does the project. Business however, is thought to be able to contribute to development, not for development's sake, but because profit seeking can help development forward.

In summary
Condensing literature into findings for this thesis, it is clear that there are many concepts and ideas of how the role of businesses can be included in discussions of how to solve complex social problems sustainably. Be it market-driven, market-driving, market-creation, shared value or other there is not much literature explicating the *processes of how these solutions* are created, or if these approaches indeed lead to more sustainable solutions. For instance, business models that seem to work are described in terms of what makes the business model work today, but reveal almost nothing about *how* the business model is created; i.e. the processes behind them. And the effects of these new business models on sustainable development are also not found in literature. Business model approaches to developing economies do exist and are found valuable and will be linked to time and again in the thesis, but the research is not intended to contribute or discuss business model literature. And the main reason is that the thesis did indeed try to learn how actors in access2innovation apply a business model approach – with help from access2innovation – but as none of them did, or at least not in a way that was expected (see section 3.8.1. about 'Changing theoretical perspectives') it became difficult to study further.

Other case stories reveal that a market oriented approach to solving complex social problems can indeed become possible (GIM cases – see footnote 9) but such cases either are not truly commercial ideas (philanthropic), or they fail to describe the processes of what it takes to arrive at the solutions.

What can be concluded from looking into the overall paradigm of commercial approaches to development is that there are signs that a commercial approach to complex social problems *might* work, but the cases that emerge are fundamentally always considered for their current way of working, and little if anything is mentioned about what it takes to achieve this result; i.e. the processes behind them. There are some interesting stories of social businesses in Asia that showcase the potential of commercial approaches to poverty alleviation, but none exist in the context of Sub-Saharan Africa (as is the focus of this thesis).

Commercial approaches to development, as a relatively new idea, has spawned quite a few different manifestations, which are all in some shape or form trying to find a model or method that will work. In other words, no one today will commit to have found a good working model for how commercial actors are supposed to help solve complex social problems in Sub Saharan Africa, profitably. The initiatives that are available for research are all in some state of flux as new ideas are tried and changed.

3.2 Interpretations of commercial approaches to development

The Wharton School of the University of Pennsylvania encompasses a program called The Wharton Societal Wealth Program (WSWP), which was launched in 2001. Wharton also boasts a range of prominent researchers on poverty alleviation as either working staff or published authors through Wharton Publishing, such as Prahalad who is renowned for creating a new discussion on poverty alleviation with the Base of the Pyramid concept in the book 'The Fortune at the bottom of the Pyramid' (2009). The WSWP also seeks out to discover how commercial businesses can take part in the growth of emerging markets as well as help solve complex social problems. In other words, the program is a pursuit somewhat similar to the program (access2innovation) in which this thesis is created.

The program considers partners as important as no single actor will be able to succeed alone. A significant part of the paradigm considered by WSWP as explained by two of the researchers leading the program, Thompson and Macmillan (2010), is that businesses tend to fail in their pursuits for profits in emerging markets in part because they *tend not to be able to comprehend the challenge* it is to do business in an emerging market, and ostensibly fail to recognise the risks and uncertainties related to them. Thompson and Macmillan (2010) lay claim that *the preparation of doing business* in an emerging market is firstly about creating knowledge about a particular market by surveying these markets in terms of legal issues, infrastructure and other fundamental aspects of which businesses rely. These activities, Thompson and Macmillan believe, are difficult for businesses to conduct, which is why the researchers as WSWP do the preparatory work *for* the businesses. The important notes for this thesis, in relation to the WSWP is that 1. there are acknowledged preparatory phases for businesses to consider prior to attempting to access markets, and 2. that businesses fundamentally are challenged by this sort of study and preparation and 3. that the WSWP have chosen not to figure out a working model for how businesses can learn how to do it themselves, but the WSWP have so far performed this service *for* the businesses.

A research-based approach to development is the Stanford SEED (Stanford Institute for Innovation in Developing Economies) program. SEED is about innovation and entrepreneurship where the founders perceive poverty alleviation as a challenge to be solved by fostering new ideas and creating local entrepreneurs. As such one of their main programs; the "Transformation Program" is primarily centred on development of entrepreneurs for locals, and therefore not about how other or foreign commercial enterprises can become part of development efforts.

For this thesis however it is important for the reader to take note of the following, taken from the WSWP program:

- there is a need, in order to do business in emerging markets, to survey the market *before* entering it.
- there is a need to survey more than the immediately obvious lines of inquiry, and therefore a need to survey adjacent conditions of what it means to do business in places like Sub-Saharan Africa
- and there is an assessment that companies are challenged by performing such activities
- and this is why the WSWP initiative performs these studies *for* companies

This thesis is in some respects an attempt to uncover what happens when companies are asked to actually do these things themselves, and to discover what they actually do. But this will become clearer later.

Another example of a market oriented understanding of development is the Massachusetts Institute of Technology (MIT) concept. MIT has conducted educational training and research based on their own concept of how to undertake development in emerging markets. Their D-Lab[12] concept, originally coined as a Design, Develop and Disseminate program (it is now Dialogue, Design and Dissemination), utilised the notion that for ideas to become viable one must consider all aspects of the value chain. In other words, to find viable solutions in emerging markets is not only a matter of designing or inventing a new device, but also to develop it with users and making sure that there is a dissemination plan in hand to make sure the solutions is made available to a large number of people – primarily based on a market oriented approach. And a 'market oriented' approach is another way of saying that the solution is only a solution if those that are to utilise the solution can afford to pay for it, or the business model includes a financial tool that allows the user to pay for it. Essentially, if users can buy the solutions then businesses are able to scale up activities to reach many more users than a donor financed development program. The D-lab has undergone developments to include other focus areas such as, Dialogue, Discovery, Culture etc. as the d-lab researchers have come to learn that the processes of arriving at solutions are dependent on great many stepping stones, rather than just the original three (Seminar sessions at UC Davis, Davies, USA, 2013 – see Appendices).

Another development concept was created in 2007 with funding from the Danish government, and later also from the EU Social Fund; the action

[12] http://d-lab.mit.edu

research based initiative 'access2innovation'[13]. This was and still is an attempt to form some other perspective that may introduce more sustainable concepts of cooperation.

3.3 The access2innovation concept

The following section and sub-sections shortly addresses the principal idea of the access2innovation development program, the main activities and goals, followed by a section discussing the findings thus far. Note: The data for this 'findings' section is primarily based on the ideas of the founder of access2innovation and his own PhD thesis (Ravn 2012), and also dialogues throughout the years, which were summed up in a final interview conducted in 2014.

The development program access2innovation was initiated as part of the greater discussion of Development Aid as mentioned above. It has been erected on the basis of funds obtained through the EU Regional Development Fund and also the Danish Government. The program employs a specific interest in forging *partnerships for development*, as also the MDG purports, as partners are thought to be important in leveraging existing efforts, but in the case of access2innovation, these efforts led to new solutions.

The perspective on partnerships is with a specific interest in 1. *Facilitation* and 2. *Business Models.*

The founder of access2innovation, Jacob Ravn, submitted from early experiences that NGOs, in particular, face challenges that they have poor chances of solving, and part of these challenges could be addressed if NGOs could cultivate the ability to enter into partnerships with commercial businesses and researchers (Ravn 2012). Essentially, NGOs are considered important, but they, along with research institutions and businesses, need to consider ***new business models*** for how they create value in their given context. The program is essentially *calling for a greater focus on existing paradigms* at sector level, and enrolling actors with the perspective that an alternative approach is needed – not only amongst commercial businesses.

Thus, the ethos of access2innovation is based on the idea that more sustainable solutions for development in places like Sub Saharan Africa can be reached if the stakeholders would come together to cooperate and create these solutions. And part of that is to look to literature on commercial

[13] www.access2innovation.com

approaches to development to learn how companies can take part in these collaborations.

But as actors from different sectors operate with different agendas, cooperation is difficult. A *facilitator* is needed to coordinate activities and also to inspire actors to keep working together (Ravn 2012).

The idea of bringing together actors from different sectors is not new as many publications can reveal (Selsky and Parker 2005, Kolk et al 2008, Rein and Stott 2009, Austin and Seitandi 2012), and the main idea is that actors have different knowledge and experiences to draw from. And bringing these together could spawn innovations and solutions, which would otherwise not emerge, which is part of the innovation literature.

"When actors from different sectors focus on the same issue, they are likely to think about it differently, and to be motivated by different goals, and to use different approaches" (Selsky and Parker 2005, p. 851).

By the coming together of actors from different domains new inspirations, knowledge and capacities could foster new solutions; i.e. access2innovation are *staging innovation processes*. But these very different actors, due to their different domains, would need a facilitator to keep projects afloat. And as a facilitator brings actors from different sectors together, they are allowed access to new innovations, thus the name 'access2innovation'

The access2innovation helix is visualised here:

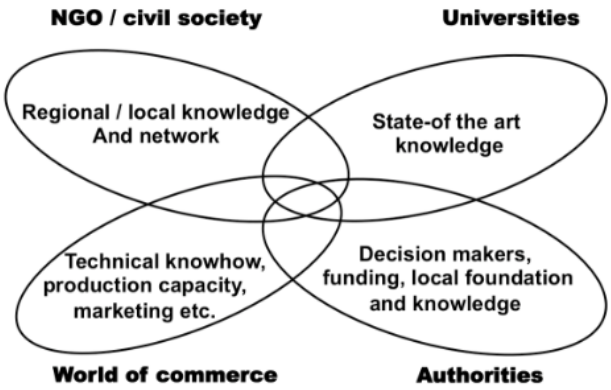


Figure 1: The access2innovation Helix
Source: access2innovation.com

Essentially, for new solutions to emerge to the benefit of the poor and commercial businesses, different sectors must learn to cooperate to add new value in new ways, i.e. new business models. But arriving at these models in partnerships requires facilitation, as mentioned, and access2innovation can be understood as operating in the centre of the helix where actors come together to create new solutions.

The long-term goal of access2innovation is to provide a platform of cooperation across sectors not only in Denmark and comparable countries but also in the context of developing countries, visualised here:

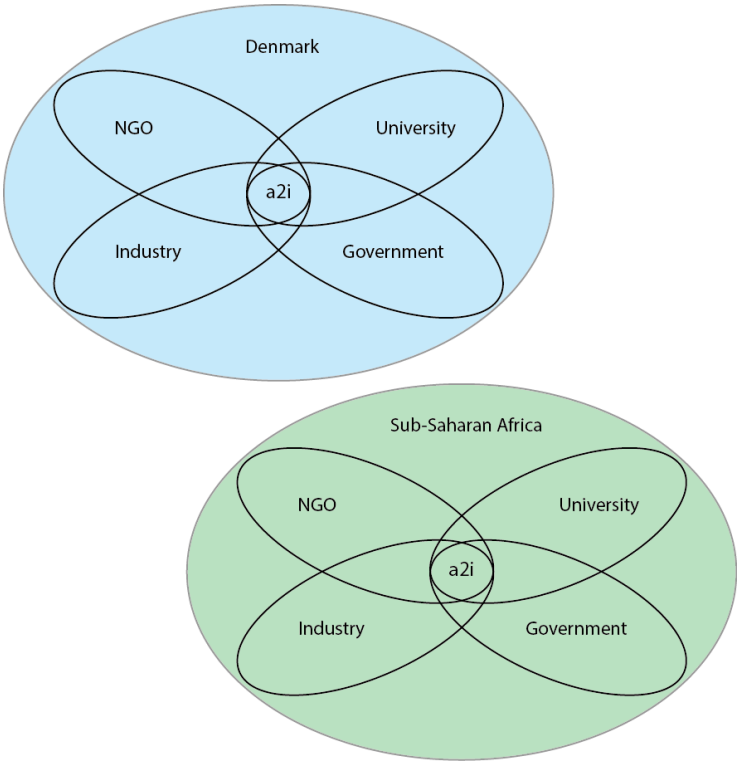


Figure 2: The access2innovation perspective of replicating the helix in other locations
Source: Condensation of the access2innovation strategy (access2innovation.com)

The essence of this vision is based on a step-by-step approach where the access2innovation organisation will help facilitate collaborations, which in the long run hopefully will help local actors in facilitating their own collaborations. All with the intent of fostering new solutions to the benefit of

solving complex social problems, by also including industry as part of the solutions. (The step-by-step process will be elaborated later, where the first three steps – coined access2innovation version 1.0, 2.0 and 3.0 – showcase a few of the different opportunities for collaboration)

Literature concerned with development programs such as access2innovation and the others mentioned above, adhere to one of three different specific focus points; *formation* – how partnerships are formed, *implementation* – on how they operate and finally, *outcome* – the output of the efforts (overview article by Westley and Vredenburg 1997). This thesis and the access2innovation initiative hopes to contribute to the understanding of business in partnerships, as they actually *do* things, which is not a process easily dissected into stages as that of Westley and Vredenburg. As will be elaborated later, access2innovation are focused on the *processes* of the projects and hope to be part of the partnerships from formation to implementation, but in terms of output there are still ways to go. For instance, there are challenges in measuring the effect of commercial approaches to development from a research perspective, simply because many things take a lot of time in order to come to fruition, e.g. to establish if a business model has been developed and implemented successfully will on average require 5 years of operations, compared to 2 years in e.g. European markets (Kubzansky 2012).

Furthermore, any value adding activities in a pure business sense is more easily assessed as businesses will survive or not. But whether the activities eventually have any of the desired *social value* in the markets or poverty alleviation benefits, there is very little knowledge about. Or framed differently, the idea of solving complex social problems by commercial approaches to development could help alleviate social challenges on a greater scale – there is still have no evidence for, yet.

And also, formation, implementation and outcome the facilitators of access2innovation have come to *believe* happen all the time at different levels. But there is still need for a deeper understanding of these processes, *as they happen*, as this will create great value in how the facilitation efforts can be organised to greater effect and this understanding, although context specific to access2innovation, could benefit other development programs adopting commercial approaches to development.

3.3.1 Staging innovation – setting the stage

The access2innovation team (consisting of a manager, three PhD fellows, a financial expert and a coordinator), have developed the facilitation processes

within the initiative and are primarily centred on fostering new innovations by the bringing together of actors from different sectors.

Staging the innovation processes or preparing the platform of innovation prior to actually conducting innovation activities, and prior to recruiting commercial businesses, also includes activities of networking with potential partners already operating in the market in focus, as another hypothesis drives the projects: especially entrepreneurship processes when entering or creating new markets, are dependent upon established relations in the target market:

"Personal trust and relationships are important, especially in early stages of development when firms – and therefore transactions -- are small, product quality is not standardized, and economic agents have no forecloseable assets. In these circumstances, business networks help reducing transactions costs by circulating information on contractual performance and by coordinating the punishment of cheaters. Networks thus play an important positive role in market development." (Fafchamps 1999, p. 34 author's original document[14])

An interpretation of these thoughts is that actors that have no networks to latch onto will be less willing to try doing business in a particular setting, and when they do try they might spend too much time building relations and less time building businesses. The costs of building relations then have to be taken into account in the overall profitability of a business venture, and it is therefore the access2innovation idea to create a network of relations beforehand, for actors to latch onto. In effect a *pre-fabricated network* so that the actors are not entering completely empty-handed.

The staffs of access2innovation then spend resources in locating actors whom are thought to be valuable partners in future projects, prior to recruiting Danish businesses. This process has been adopted from the aforementioned DANIDA method, of identifying actors prior to engaging Danish companies. And this is as an attempt to make it easier for new commercial partners with access2innovation to strike up relations.

The access2innovation initiative essentially becomes a network of actors, and through the years the network increases and so too does the quality of the relations. *Quality* refers to the relationships becoming more intimate, primarily as a function of getting to know one another through action.

[14] Author deceased, first published at Stanford University http://web.stanford.edu/~fafchamp/ediconf.pdf - and again as edited by Masahiko Aoki and Yujiro Hayami in "Community and Market in Economic Development" - DOI: 10.1093/0199241015.001.0001.

"A relationship between two companies does not become automatically a perfect `team' (or quasi-organization), but the potential is always there. The team effects have to be tried out. They develop as the parties involved experiment with various connections and learn about their effects. The quality of the relationship is the extent to which this function will be exploited."
(Håkonsson and Snehota 1995 p. 37)

And by knowing how each other operates through experimentation, actors become better at aligning efforts and utilising each other. But as some relations and networks are created without bonds or dependencies it has the opportunity to benefit from weak-ties (Granovetter 1973), as strong ties are not the only beneficial relationships. In other words, to benefit from collaborations does not imply a need for strong collaborations. This too can be said of the network that is access2innovation, in that the relations that are created might not be strong, but they become increasingly valuable as the participating actors come to know each other through each project and experiment. As such, the value of the efforts of access2innovation will increase over time, as the network relations become better at aligning efforts as more actions and experiments are conducted.

In the future, the hope is to be able to enrol actors more fluidly with greater results and impact to follow. But here in the early years of the program the primary concern is to try and find potential local partners by creating a list of actors thought to be interesting or relevant. But it is only a *pre-fabricated network* for the commercial partners to access when they start exploring the opportunities.

In yet other words, access2innovation is about staging innovation processes by facilitating contacts within and across sectors, so that collaborations are enabled and experimentations can commence.

3.3.1.1 Partner focus

NGO partners and research partners are enrolled into the program by being offered an opportunity to access new solutions that might otherwise be difficult to reach. Some of the partners perform dual roles in that some are both members of the Steering Committee of access2innovation and also involved in the practical projects of market oriented development. Research institutions are also considered practical partners, but not as partners with direct linkages into the value chains as such. Or in other words, the role of research is considered more about entering projects, collecting and sharing knowledge, and then retreating to a less active role once commercial projects mature.

Research partners include (but not limited to):

- Copenhagen University
- Copenhagen Business School
- Aalborg University
- Massachusetts Institute for Technology
- UC Davis
- UC Berkeley
- Makarere University

The research institutions were at times contacted by us, and sometimes it was the other way around. All of them however have some interests in the context of Sub-Saharan Africa and are thought to be able to contribute to the overall agenda of making a sustainable change and to increase the quality of life of those who inhabit Sub-Saharan Africa – by use of market-oriented approaches. Their intended role is not specifically designed as something that requires proactive efforts on part of the research institutions. The role envisioned, for the time being, is that these institutions may contribute to the processes when they are asked to. Research institutions then are thought to have state-of-the-art knowledge about pertinent topics, and maybe even new technologies, all of which may find application in the realities of Sub-Saharan Africa. In terms of innovation the concept continues as it is thought that there is already valuable knowledge that might be applied in new ways to foster new solutions.

NGOs are (also not limited to):

- Danish Church Aid (DCA)
- MS ActionAid
- CARE Denmark and CARE Uganda
- The Danish Red Cross (DRC)
- World Wildlife Fund (WWF)
- Ugandan Crane Creamers Cooperative Union (UCCCU)

The choice of partners within the access2innovation network have been a mixture of natural interest in the projects in particular from researchers, but in case of NGOs some extra motivational stimulus had to be added. Most of the NGOs would eventually agree to participate, but only once the consultants of access2innovation have been able to convince them of a. the general idea of access2innovation and b. that there was an opportunity to finance some of the expenses related to collaborating in an access2innovation project. Expenses and budgets in the NGO sector are not flexible as they are often limited by those who fund them. In other words, when a project is created and funds are raised, there are little opportunities for acting opportunistic. So, if a new project emerges, the NGO by definition does not hold the needed

funds, unless of course the NGO has already raised funds to address the same topic. By offering to cover some of the expenses, the NGOs are more likely to join.

3.3.1.2 Industry focus

Specific attention is centred on certain industries (renewable energy, water and sanitation, and food and agriculture) as these have for many years been linked to major development issues in emerging markets; e.g. the poor development potential due to lack of energy (Vera and Langlois 2007, Kaygusuz 2011). The sectors are selected for their estimated underserved market potential of clean drinking water (USD 20,1 billion), food (USD 2,894 billion) and energy (USD 433,4 billion)[15]. Essentially it would seem these segments offer some immediate potential for the commercial partners, and also that these segments speak of very relevant social problems.

3.3.2 Quantitative Goals of access2innovation

As a measurement of the expected progress, a few parameters and guidelines have been created:

- By engaging 400 Danish commercial businesses, some of these might become interested in exploring the opportunities of Sub-Saharan Africa. Most will not fit and reject further collaboration.
- 60 of the 400 is estimated to an additional step and come to Sub-Saharan Africa to take a closer look at opportunities there, where 20 of these would submit applications to take part in the small funding opportunities on offer.
- 10-12 of these businesses are expected to be screened and found suitable to make additional efforts and try to work with actually implementing some sort of business in this context.
- The businesses expected to join the program are established businesses with resources to invest in projects and a core business from which new ones can prosper.
- And if possible Multi-National Corporations (MNCs) are excluded as they are thought to be self-reliant and already studied in literature, and conversely small- and medium sized enterprises (SMEs) would benefit more from the assistance given by access2innovation. And also, it is relevant for research purposes to learn more of smaller businesses as they attempt to create value in the context of Sub-Saharan Africa.

[15] World Resource Institute: http://www.wri.org/publication/the-next-4-billion

3.3.3 Activities

There are a few main designed conditions in the processes of facilitating cross-sector partnerships in access2innovation. The number of NGO partners, ideas about commercial partners, industry focus areas etc. were framed during the application for funds at the EU's Regional Development Funds and the Danish Ministry of Science and Innovation respectively. The applications, which were approved, proposed that access2innovation through the course of the project's three-year lifespan, and through the cross-sector partnerships, would create new solutions, which could give rise to 6-8 new business ideas. These businesses then are thought to forge collaborations with NGOs and research to come up with viable businesses and solutions that would generate profits for the companies and add value to local communities in Sub-Saharan Africa.

The plan has been to enrol 3-4 NGOs, who would be able to provide 2-3 business opportunities each, which in turn would be used to recruit commercial actors and ultimately help spawn new businesses and solutions. Some of the opportunities would not be pursued and some would. Identifying the actors who would eventually create the 6-8 new ventures would require the engagement of a large number of businesses as some were expected to lose interest, some retain interest and lose interest further down the line, where only a selection of these would remain throughout the length of the project. The allocation of resources, according to the applications, was based on assessments based on the experiences taken from the first years of access2innovation (2007-2011).

In practical terms:

1. First the access2innovation staffs enrol NGOs to establish a platform from which other actors can work together.

   These NGOs are enrolled with a *promise* that actors whom are able to help solve challenges for both the NGOs and the users they service will be enrolled. And in doing so access2innovation offers to help finance half of the work-hours invested in the projects.

2. The NGOs, after surveying their own projects, then offer challenges that they consider could be interesting for commercial businesses to address.

3. When visiting the NGOs in a selected country; e.g. Uganda, the consultants of access2innovation also visit other actors operating

there, such as local businesses, government officials, municipalities, dignitaries etc.

a. These activities are considered *networking*, which becomes a *pre-fabricated network*, which future Danish businesses that enter into the projects may make use of.

4. The challenges found by the NGOs in collaboration with the access2innovation facilitators, are condensed into Concept Notes, which are used to recruit Danish businesses.

The concept notes are then made available on the access2innovation website, and a call for attendance is sent out via different channels, in the hope that vying businesses will take notice and attend the forthcoming events designed to recruit and guide them through the access2innovation program. The channels used to spread the word and to recruit companies to the program are primarily through local governmental business programs and networks, but also include direct contacts to businesses believed to be interested in the opportunities.

5. The recruitment processes are different dependent upon the case in question, but as with government-funded projects in Denmark they are open for all. Actors are invited to come and learn about the access2innovation network, partners and the challenges and opportunities.

6. One such event is a large seminar where a few different projects are launched at the same time. Attendees at these seminars numbering in a hundred people or more, consisting of businesses, researchers, NGOs and others, are given an opportunity to talk together in open forums, through which the different actors are able to find each other. This is what is part of setting the stage of innovation; i.e. by bringing together potential partners, innovations may emerge. It is this element of collaboration found to be different than most other development programs, including those mentioned elsewhere in this thesis. It is also a main part of the provisions behind the funding of the program.

The processes following these first introductions are mainly designed to allow the actors to forge collaborations:

A. The businesses that show interest in the presented opportunities are invited to visit the NGO partners in the country in question, and they are offered to do so very quickly so as to give them a good indication of what it means to work in Sub Saharan Africa.

   a. A trip to Tanzania was organised with this researcher and the company Aquaplaning (later Remote Sanitation) in 2011
   b. A trip to Tanzania was organised with this researcher and companies Obton, WaterBySun and SystemTeknik in 2012
   c. And others

B. During these trips, the commercial actors are encouraged to contact pertinent local actors, both in terms of the advice given by access2innovation, and in terms of how they perceive the context.
C. As part of a package actors can be remunerated upwards of DDK 10.000 (less than USD 2000) of expenses related to the trip (in finer detail, only support expenses related to the work-hours invested in joining the program are remunerated, and not expenses for airfare etc.).
D. The businesses are encouraged to meet other actors whilst they are in the country, including actors from one of the *pre-fabricated networks*.
E. During this visit the access2innovation consultants hope to motivate and retain interest from the businesses so that they are willing to take another step towards doing business there.
F. The attending businesses may or may not have booked meetings with other actors as they see fit.

A defining challenge when attracting businesses is that they by definition are reluctant to consider these difficult markets, and that they need encouragement to stay motivated. As such, the network contacts, the small funding opportunities etc. are thought to minimise the perception of financial risk. And the first visit to the country in question, is primarily to allow the business actors an opportunity to get a first impression.

Upon returning home the businesses are contacted by access2innovation to learn about their experiences and ideas for next steps. When doing so the actors are offered a few things:

i. There is a larger funding opportunity (DDK 250.000 ~ USD 40.000) made available for those businesses that seek to take one more step in finding commercial opportunities together with access2innovation partners. The funding again is dedicated to help fund the work-hours invested into the project and not for materials, airfares or other devices.
ii. A range of different workshops and courses are offered to help raise the level of information and skill level of the actors, which include Business Model Innovation, Financial Tools, Market Creation Tools. Partners are also offered to participate in the company internal

meetings so as to facilitate contacts to Sub-Saharan Africa and contribute with research-based knowledge. These activities are voluntary.

iii. The facilitation work includes locating potential partners locally, sourcing knowledge and researchers in research institutions both at home in Denmark but principally anywhere in the World.

The access2innovation consultants also work behind the scenes to influence policy making for the benefit of the businesses attending the program, as the grants and support funds made available through government channels require different conditions and settings for the companies looking to receive this support.

The commercial partners, who join the access2innovation program, are also offered an estimated 20 hours of consultancy by access2innovation consultants as part of the program. How the partners wish to utilise this help is not predefined and is dealt with case by case; e.g. the company SystemTeknik did not at any great length make use of this service (and still succeeded as shall become clearer much later in the thesis), where e.g. the company Remote Sanitation did use the help of access2innovation (and still failed, as also will become clearer).

The drive for results is rooted in how *funding* is acquired and the deliverables related thereto. And the deliverables are strongly linked to actual and practical actions on the ground by a certain number of practitioners. Or to frame it differently; the task is to work towards creating new businesses and solutions to solve complex social problems in emerging markets and the work efforts are primarily targeted at reaching these goals. From these practical day-to-day operations, this researcher hopes to reflect, re-plan, implement and reflect for the purpose of informing research of the developments.

3.3.4 access2innovation research focus

The initial access2innovation consisted of a Secretary Manager and three PhD students. The PhD students were enrolled to offer insights into three different research domains; User Driven Innovation (humanities study), Technology Transfer (socio-technology study) and Business Models (socio-economy study – which is this thesis). The concept of enlisting three different scientific domains was based on the lingering awareness that contextual knowledge within these domains were both relevant for the projects coming through access2innovation and relevant for research (interview with Ravn 2014). The funding applications that ultimately enabled the access2innovation project to

continue operating also included specific detailing about the amount and specialities of the PhD students who were to be enrolled into the program.

The User Driven Innovation PhD student stopped prematurely for personal reasons, thus leaving the access2innovation organisation short on hands, and also short on thematic focus on user driven innovation. A user driven perspective was, and still is, important as it allowed for a greater focus on the *inclusivity* shown through the UN declarations and cases (as mentioned earlier). The access2innovation organisation has since gained a project coordinator and a financial expert, but from a research perspective User Driven Innovation was left rather untouched.

Five people, in essence, have acted to increase commercial activities for the benefit of the poor, and research was conducted with the purpose of collecting knowledge from the projects and disseminating this knowledge to a wider audience. The main research perspective is action research (see section 5.2), and it must be said that from a research standpoint it is quite clear that the first 2-3 years of projects tend to be fundamentally more about *action* than of *research*. Creating practical results drove the activities, and only from these has data been collected for research. As such the work is focused on creating practical solutions and any research must humbly reflect this.

3.3.5 The role of Business

The role of business in the access2innovation program, as is the main focus of this particular thesis, is strongly linked to the aforementioned issues of market-oriented approaches and scaling of development projects. The *reason* for involving business then has been argued, but *how* businesses are enrolled and assisted through the access2innovation program, will be further elaborated here.

Re-cap: The envisioned role of business in the access2innovation projects is that they provide knowledge and capacity to lift projects to scale, by the use of their innovative capabilities. And by cooperating with local actors (NGOs) who explicate potential business opportunities, businesses would feel compelled to innovate solutions to exploit the gap in the market.

3.3.6 Market Creation

Markets rarely exist in third world countries; there might be plenty of *needs*, but not much *demand* (Simanis 2010). The *market creation* approach is understood as something quite different than rudimentary buying and selling

or what this author might coin a traditional 'ship it there and try to sell it' approach to business. Potential customers must first learn to appreciate the added value of a proposition, product or service, and often also gain access to some sort of financing tool in order to pay for it.

There are of course 'markets' in Sub Saharan Africa that work well, as goods and services are traded all over the continent. But the importance for e.g. Danish companies looking to Sub Saharan Africa is that the conditions of doing business there might be very different than anything else, and potentially, and most likely, the market does not exist. The market creation approach of access2innovation is offered because by being attentive to the possibility that e.g. a company's idea might not have a market, then the company should explore how to create it.

For example: The Confederation of Danish Industry (also a partner organisation in access2innovation, and members of the Steering Committee) conducted an analysis, which led to the Market Creation Toolbox[16] showcasing the challenges of raising awareness, and in one particular case showing how local farmers could add value by buying a newly developed wheelbarrow, which is but one example that will now be explicated.

The problem inherently lies in the total cost of the wheelbarrow. Even when an easy-to-assemble wheelbarrow was offered at USD 35 the farmers were dismissive of it. So, a process of raising awareness of the value of the wheelbarrow commenced. Within the awareness activities was an example where farmers were asked about what they do today when transporting goods to market. Fundamentally the healthiest four people would take baskets, fill them, and carry them on their heads and go to market. The four people would be away most of the day as the walk to market was significant. Farmers were then asked about the profitability of this solution, to which there was much uncertainty. To cut a long story short, the farmers eventually realised that the baskets were of poor quality and were replaced every once in a while, and that four healthy men not available to work on the farm actually was bad for business. But with the wheelbarrow one worker could carry the whole load of produce to market, the wheelbarrow would last a lot longer, so the cost might seem steep at first impressions, but the total cost was much lower than their existing solution of carrying produce in baskets.

Essentially, the Danish group of people investigating this issue, had to *work with the farmers* (inclusivity) so that they could learn of the benefit of a

[16] The toolbox is available to all here: http://di.dk/dibd/boplearninglab/toolbox/Pages/ourtoolbox.aspx and within the toolbox different actual case stories of how businesses create markets are shown.

certain product. When the farmers *became aware* of the added value of what seemed like an expensive technology, a *demand* for the product would emerge. The demand would not emerge by itself. The Danes *had created a market*. Simanis (2012) discusses this with a similar perspective and coins it 'High Touch business models', which essentially means that any seller of a product must expect to be in touch with its potential customer many times over longer time to convince them to buy the product. This has great impact on the profitability of a product to the point where the idea of selling low-cost products at a low-price point seems unviable.

But this example is based on *poor people* and the challenges that businesses face when targeting them as customers. Looking to sell a completely new product to more affluent customers, such as civil society organisations, does include some of the same challenges, which are not new to research; e.g. the emergence of the ViewWorld[17] mobile phone application designed to help NGOs document their field work electronically. This might, from a business perspective, seem like a good idea, but NGO customers have never bought this sort of thing before and therefore there was no market – ViewWorld had *to create the market*, albeit with rather different processes than that of talking to local farmers in Sub-Saharan Africa.

In other words, the process of inclusivity may be most clearly relevant in cases of working with poor people (as proposed by the UN's GIM cases as mentioned in the introduction), but in other cases where a segment of potential customers have not been in the market to buy a product or service, markets too *must be created*.

Therefore, access2innovation promotes a *market creation* approach towards the Danish commercial partners looking for opportunities together with the NGO partners.

The ontology of the thesis then can so far be considered as discussions of:

- Market Creation – there are no markets, and actors seeking to explore commercial opportunities cannot rely on players already being active, thus the focal company may have to create the players for markets to become.
- And through successfully navigating the complex activities needed to establish viable businesses through cooperation with other sector actors, the effects of it all could lead to wealth and prosperity locally, and in the long run lead the alleviation of poverty and more sustainable development solutions.

[17] Part of the access2innovation program www.access2innovation.com and www.viewworld.net

3.4 access2innovation – in detail

To re-cap: The access2innovation initiative is an attempt to show that NGOs, who are believed to have local knowledge and access to local communities, municipalities etc. can offer valuable insights and accessibility to commercial partners who are thought to be the main proprietors of capacity to create the solutions; i.e. businesses are considered to have the resources to create, scale and disseminate new solutions. Research institutions are considered valuable partners as they are knowledge gatherers and can contribute state-of-the-art knowledge into the partnerships.

The EU and the Danish government fund the access2innovation initiative, where activities are considered to be an exercise and experiment in trying out alternative approaches to development, with three distinct phases:

Version 1.0 (from 2007-2011) was an attempt to look into opportunities in seeking out NGOs as customers. The paradigm here was rooted in the belief that NGOs lack the ability to co-create, with businesses, the solutions the NGOs need to do their job. Or in other words, version 1.0 is an attempt to exploit an under-served market consisting of NGOs. From these experiences with working with NGOs access2innovation would expand the scope of operations.

In practical terms the processes of creating new solutions were considered as follows:

- access2innovation staff contacts an NGO with offices in Denmark to recruit them to the program.
- The NGO points to a certain location where the NGO believes there are good opportunities to enrol locals and provide commercial opportunities.
- The selected markets are countries where the Danish based NGO has operations or affiliated partners in the particular country
- In access2innovation version 1.0, the NGO 'Danish Church Aid' (DCA) was the sole partner, and this led to investigations in particularly in Angola and mine-clearing efforts there.
- These challenges were brought home to Denmark and industry and researchers were put together to see what solutions there could be invented.
- All of this with the purpose of creating solutions that the NGOs would eventually purchase to use in their work in local contexts.
- (and therefore *not* a perspective of trying to sell to local consumers, businesses or other)

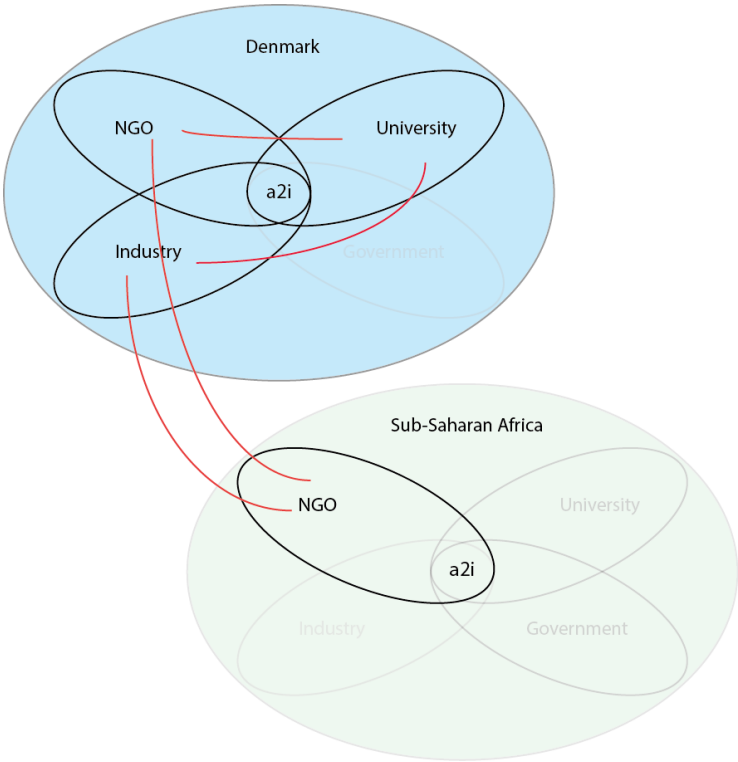


Figure 3: access2innovation perspective in version 1.0
Source: Condensation of the access2innovation strategy (access2innovation.com)

From these activities, the intent was to help NGOs gain access to new technologies that would help these organisations do things that they would otherwise not be able to. And in turn, the benefits of these technologies were thought to have either a direct or in-direct social impact.

This first version of access2innovation led to the formation of four new companies and initiatives: Sky-Watch[18], ViewWorld[19], WorldBarrow[20] and The Green Generator[21]. The cases were created in collaboration with Danish Church Aid in relation to in particular demining efforts in Angola. All of these are documented in the PhD thesis of Jacob Ravn (2012). All of the four new ideas were largely addressing the NGOs' needs, and not directly the needs of

[18] http://sky-watch.dk
[19] http://www.viewworld.net
[20] http://www.worldbarrow.dk
[21] http://www.access2innovation.com/en/cases/relief/the_green_generator_02.htm

the wider poor population, although the WheelBarrow was targeted at low-income users directly, it still has not been able to fully form as a business, yet. The conclusions drawn from this first version and ostensibly the first paradigm of access2innovation, was that indeed new solutions would be possible to emerge when NGOs work together with businesses, with the aid of research, but the products of these collaborations would not be possible without facilitation.

What was yet to be determined was whether the commercial enterprises would flourish, whether the NGOs and the community they attend to locally would benefit somehow and basically if any of the projects would go beyond initial start-up and become something that adds value.

Version 2.0 would to some extent revisit the former cases to determine how well they are doing. But the primary idea behind the 2.0 version of access2innovation (from 2011-2014) was an attempt to build upon the actual partnerships of version 1.0. The paradigm was primarily built upon obtained experiences as an intermediary and facilitator, to enrol NGOs in a new perspective – the perspective of finding solutions that would become sellable to lower income communities, directly. The NGO partners would then change their roles from previous projects from a customer to an intermediary too. The idea was basically that NGOs could become access points to the end-users (the communities the NGOs served) themselves, and NGOs would then facilitate contact at first to access2innovation staff, and later access2innovation would bring companies to interact with these local communities to allow all these actors to co-develop potential solutions.

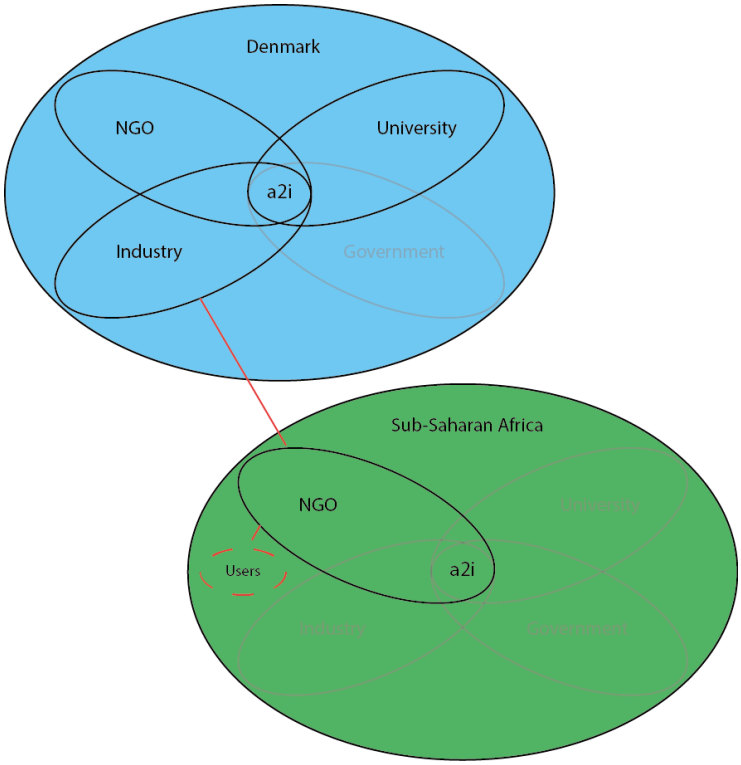


Figure 4: access2innovation perspective version 2.0
Source: Condensation of the access2innovation strategy (access2innovation.com)

Version 3.0 (from 2015-) is thought to be an attempt in a more integrated approach to the markets of especially East Africa, where commercial actors are working not only with the poorer segments as customers but with a special attention on poverty alleviation and solving complex social problems, which is essentially the main goal of access2innovation.

The research agenda of the access2innovation researchers and consultants was designed to be an action research based approach. In other words, the work conducted in access2innovation would follow an action research process where plans, actions, iterations, new tools etc. would be documented, with the purpose of reaching practical results. But the knowledge would be gathered and shared so that others may learn from the work. This is part of the rationale behind the funding given to access2innovation. The role of the access2innovation staff however has primarily been considered as action research consultants rather than action research researchers. In some respects, access2innovation workers would at times be facilitators in

access2innovation and other times would become part of the helix model as researchers who would interject specific research-based knowledge from literature, but the former took up significantly more time and energy than the latter.

3.5 Findings of access2innovation from version 1.0

This section is based primarily on discussions between this researcher and supporting supervisors of this researcher, and the researcher who initiated the access2innovation program and wrote his PhD thesis accordingly (Ravn 2012), and who also enrolled this particular researcher into the program in 2011.

It has been documented that NGOs operating in Sub Saharan Africa are potential customers for Danish commercial actors (Ravn 2012), but the results reveal that the commercial actors do not behave as expected.

Some of the findings include:

The commercial actors, who were partners in access2innovation, would indeed enrol NGOs and research when trying to develop solutions, but the partnerships would not persist beyond the idea generation phase. Once an implementation would commence, from the perspective of the commercial actors, the partners would all be changed out for other partners, which in turn meant that the commercial actors could still benefit from the projects, but the initial NGO partners would be left out. For example, the case of Sky Watch, which is also one of the cases explored further in this thesis, started out by working and developing solutions with the NGO Danish Church Aid, but through different developments of the business the Danish Church Aid were written out of the developments and the final product of Sky Watch ended up benefitting someone else entirely (oil industry etc.).

Thus, the access2innovation approach needs to be refined, especially if the intention of the access2innovation is to contribute to a better understanding of how commercial approaches can lead to solutions for complex social problems, and this thesis delves into refinements in particular in relation to commercial actors.

From a conceptual standpoint, the access2innovation helix-model seems to be validated to some extent, in that the processes have allowed actors to come together to explore opportunities, ask questions and learn from each other. But looking closer there seems to be some untested assumptions about the role of the different actors.

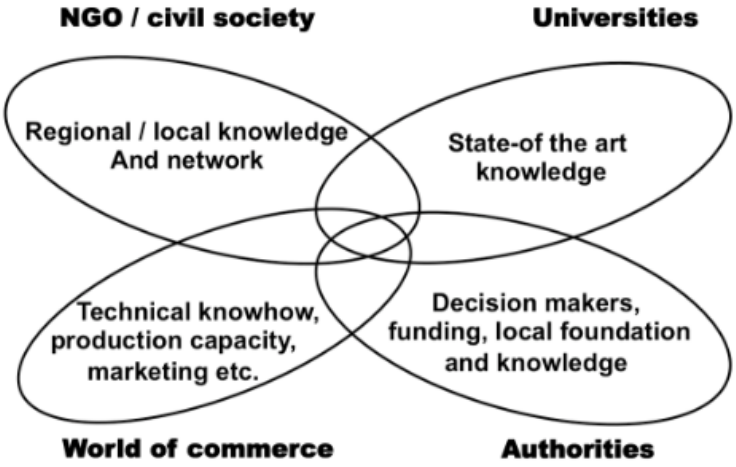


Figure 5: The access2innovation helix
Source: access2innovation.com

One example of where new insights are needed, relates to the actual interfaces between the different actors. Processes of innovation and staging innovation in the access2innovation helix are considered to be processes where actors interact to form new solutions. These interfaces and interactions seem to take place but only fractions of them are known, and ostensibly little is known of what actually takes place when actors from different sectors meet and attempt to help each other. Do processes of asking questions to learn of each other actually take place? Do experiments take place during these interfaces, as a process of innovation would suggest there should be? When reviewing the access2innovation projects from 2007 to 2011, there seems to a disconnection between what the companies where imagined to do, and the result of the efforts, namely the lack of benefits on behalf of the NGOs despite their attempts to include companies as part of creating solutions. In other words, it could be hypothesised that one or more of the attending parties are unable to or otherwise hindered in engaging the other to the benefit of both. In initiatives, such as access2innovation, the imagined roles of the actors from different sector must be revisited.

Another example of how there is a need to revisit a fundamental aspect of the access2innovation model, is the idea of ***business models***. As part of the access2innovation is to facilitate partnerships and bring together actors with valuable knowledge and insights, research suggests that a *business model* approach of doing business was more likely to succeed in Sub Saharan Africa

(Kubzansky 2012, Prahalad 2010, London and Hart 2004)). The business model perspective is basically a different perspective on commercial innovation, in that it is not just the product or service that is the focus of innovation, but also *how business is done*. As such the tool of Business Model Generation (created by Osterwalder et al 2010) has been introduced into the access2innovation facilitation processes as a means to help especially the commercial actors to allow them the best possible approach to the opportunities in Sub Saharan Africa. The processes of creating business models was suggested by Simanis (2010) as mentioned earlier, as High Touch business models, which means that commercial actors must expect to enrol its targeted customer many times before a deal is made. This is very much linked to the aforementioned understanding of Market Creation in that commercial actors must not expect neither markets to exist nor that any players exist in these markets. And as mentioned earlier too, there may be actors who act in informal capacity and therefore might not be known or easily identifiable, all the more reason to adopt a more explorative approach to business rather than a 'ship it there and try to sell it' – approach.

However, none of the commercial actors who joined the access2innovation program adopted the business model approach. Yet, a few of these businesses ended up with, and are still working on, viable solutions despite not clearly adopting a business model approach (although they could have – but it is unclear)!

Cleary commercial actors who have joined the access2innovation program behave in ways not fully understood, which inhibits the provision of effective facilitation. In other words, to improve facilitation a greater understanding of what commercial actors do in these contexts is needed.

Other findings drawn from the access2innovation first years, 2007-2011, reveal other matters of potential points of interest:

- The challenge of including research into proceedings has been underestimated. It has proven difficult to create good fit between researchers and the practical challenges the NGOs and companies are facing.

  A specific example of the challenge of collaborating with a research institution as part of an NGO and company project, was the Green Generator project. The concept was envisioned to be a renewable energy device that could both include many different types of renewable energy sources; i.e. wind, fuel cells and solar, and it should be transportable, which would benefit demining (the clearing of military landmines etc.) efforts as workers would move from location to location after areas have

been demined. The person given the task of figuring out the solution was a researcher at Aalborg University, Denmark, who after 18 months concluded that such a device was indeed possible to make. Only he did not look at the bigger picture as his solution cost around 60.000 euros to make, which did not in any way reflect what a market for these things would be willing to pay for. So, this is a case of researchers not being given a task that clearly reflected the desired outcome – a marketable product (a product that customers would be willing to pay for). The challenge here was not found to be solely a fault on behalf of the research institution, but due to a lack of understanding on behalf of the facilitators that the design process of the researcher should also include financial concerns and market information.

- Innovative processes do not only occur in the established partnerships of NGOs, companies and research, but also within the access2innovation organisation itself. However, changing the business model of access2innovation, to allow for more opportunistic projects that were different to those that were initially envisioned, proved difficult.

A recurring event at access2innovation was when a company that had already envisioned an opportunity in e.g. Uganda, and were looking for support to help them succeed. Despite the potential of the idea, the approach of such companies did not fit with access2innovation. In other words, as the access2innovation model suggests that NGOs are key partners in their ability to connect to local communities and provide valuable insights and contacts locally, the access2innovation program was created around NGOs. And if any vying company had not intended to partner with an NGO, the company could not be admitted to the access2innovation projects. The nature of access2innovation, how it is funded and the deliverables expected, could then not include other projects if they did not conform to the access2innovation model, despite their potential value to the projects (the manner of funding in particular will be a topic further explored later in the thesis).

The main issues found through the first iteration of access2innovation then are:

- The *business model approach* of doing business in places such as Sub-Saharan Africa is still deemed a valid approach, but companies coming through access2innovation do not adopt the approach despite being subjected to it by the access2innovation facilitators, or at the very least the partnering companies do not act as anticipated – they must be better understood.

- The nature of the partnerships, particularly between NGOs and companies suggest that NGOs are not able to continue partners with companies to a point where the NGOs benefit from the partnerships, or companies in some way choose to not work with them, are all concerns not fully understood.
- Including research as partners in access2innovation has been a challenge, but has since been understood as a matter of facilitation, which has been improved since and has no further interest for this thesis.
- The overall model of facilitation, the access2innovation helix, has been subjected to experiments of its own, as the envisioned projects could at times be altered to include other new ideas from companies; ideas that were not at first considered. But the model has not been able to be changed by virtue of the limitations placed upon the access2innovation program by those that fund it (The Danish Government and the EU). As the role of funding seems to influence the processes of innovation in the access2innovation organisation itself, so too it could be hypothesised that funding plays a significant role for the partnerships of companies within the access2innovation program.

As a whole the challenges needed to be addressed centres primarily on reaching a better understanding of what it is companies do when partaking in access2innovation projects, in order to improve the facilitated efforts of the new iterations of the access2innovation project, and secondly creating a better understanding of the role of funding in these innovation projects.

3.6 Research focus

The focus of this thesis is to contribute to creating knowledge about what commercial actors do in access2innovation projects, and to discover what important issues must be explicated in order to improve the facilitation efforts of access2innovation staff (and potentially other similar efforts) in future projects.

In the long-term the objectives include more sustainable concepts of cooperation. But in order to reach this level of cooperation each of the participating actors (NGOs, companies etc.) must be better understood, and this thesis focuses on companies and tries to learn how they act.

From these learnings, more informed decisions on how to organise access2innovation can be made, allowing for better and more sustainable forms of cooperation.
However, the topic of cooperation is *not* a deliberate focus of this thesis, as it will require even more theoretical contributions, thus risking to complicate an already complicated research agenda of the thesis.

The purpose of the thesis is to first understand the commercial actors as they act. Within this research one of the focus areas is on how the commercial actors enrol other actors, which might lead to cooperation. When a greater understanding of the commercial actors as they act, is reached, then a new discussion can be formed of how then facilitation in access2innovation can be improved.

The rationale of this thesis is then the following:

- If a commercial approach to solve complex social problems is a viable perspective, then there is a need to learn *how* to create these solutions, contextually and not just conceptually.
- Literature (Anderson et al 2010, Andrews 2009, Chesbrough 2010 and others) however focuses primarily on concepts and existing solutions – and not of the *processes* of creating them.
- Therefore, this thesis attempts to unveil what it takes to create solutions, in *a process perspective*.

The main research focus then becomes:
To understand the processes of commercial actors attempting to develop solutions in the context of uncertainty

Breaking down the research focus into its constituent parts; '**understand'** is the epistemological perspective of engaging actors through dialogue in order to understand the actors, 'processes' are the active element of the actors which is interesting to understand, '**commercial actors**' represent the human actors who are profit-driven, '**develop solutions**' is here understood in a wide understanding as it can entail any solution throughout the process of arriving at a commercial enterprise; in other words solutions are not only technologies or business models, but can be any part of the process that becomes part of the overall solution of the business. And '**the context of uncertainty**' addresses a particular understanding of "uncertainty", which will be elaborated in section 4.1.

But still the intent of this thesis is too widely defined. To study all manner of activities performed by any actor in a process perspective, will be too difficult, so a few narrower perspectives are offered in the form of sub-questions.

a. **How do actors make sense of the opportunities?**
b. **How do actors enrol other actors as part of developing solutions?**

The sub-questions are understood as follows:

a. The purpose is to arrive at a nuanced picture of how the commercial actors *perceive* or *make* sense of their intended business, and this study then can inform a discussion of how actors organise their efforts.
b. The ontology of the thesis and indeed of access2innovation is that other actors should be enrolled as part of the processes of creating solutions, but what happens in these processes is not well understood.

The purpose of this study is fundamentally to establish the actions of actors. *How* they do (enact) certain things in their attempts at developing solutions. And *understanding* what it is they do is an analysis of certain *attributes* of these activities, as will become clearer through the Theory section (Chapter 4). In short however, actors that attempt to create solutions in places like Sub-Saharan Africa are *expected* to behave in certain ways (for instance, we expect to see actors work together to form solutions), and as these understandings have yet to be understood, a range of different attributes drawn out from process theory can help sensitise these actions so as to allow them to be analysed.

3.7 Purpose

The access2innovation model operates with a helix of facilitating partnerships between Industry, Civil Society, Government and Research. And within the Industry focus, this thesis delves into the study of three embedded cases (companies) to learn from their activities.

The focus of the thesis however, is then to learn from a specific context of one company, to inform a specific context of that company in relation to access2innovation. This will be attempted in three different cases.

The cases will be analysed by use of terminology of Process Theory and Sense Making for the reason that these areas in hindsight have offered the most

suitable vocabulary to sensitise the data. There are other potential contributing theoretical perspectives to draw from, which will be delimited in the next section.

Then why does this thesis turn away from the hypothetic-deductive approach of studying how business models are created, to a more inductive approach of discovering more generically what companies do? If the research attempted to find something particular, e.g. how the cooperation takes place, it would have to be assumed that cooperation does take place – but that is an assumption. And it is an assumption shown not always to be the case in access2innovation as the participating partners tend not to remain partners throughout the commercialisation processes. As will be discussed later is the matter of business model approaches to business (section 3.8.1) – the cornerstone of commercial approaches to development – the studied actors in access2innovation are presented with the idea of investigating opportunities in Sub Saharan Africa should be done with a business model mindset, but the behaviour did not seem to fit this business model mind-set – or at least not in the way that was assumed would happen. If the researcher continued to investigate companies as actors who *should* do something particular, there is a good chance that the only conclusion worth making is that companies do not do as expected. When taking in process theories of Sense Making and Enrolment these perspectives allow for a more inductive and exploratory approach to learning about of actors who act – regardless of whether something takes place with access2innovation or not, with other actors or not etc.

The thesis' purpose to create a better understanding of the actors in a wider sense, in part because there is no basic understanding of what it is these actors are doing (it needs to be explored) and in part because to deductively look certain activities is to repeat that which has already been proven not to work (in the case of access2innovation).

So, a more exploratory study of the actors in access2innovation is merited and for that the more the process perspectives of Sense Making and Enrolment are utilised.

The aim of the thesis is then not to build upon an existing model or extant literature (beyond the thesis of Ravn, 2012), but to investigate the activities of access2innovation by use of a different vocabulary. And as has been mentioned repeatedly throughout the thesis – the purpose is to sensitise data that otherwise did not make sense. The framing of the research then is based on the choosing of a vocabulary, which to the researcher seems to be able to make sense of the data. And in yet other words – the perspective has not been to deliberately contribute to process theory, enrolment or sense making, but

to utilise these perspectives to make sense of data, so that we in access2innovation can act with greater understanding of particularly the companies that take part in the projects. The outcome of the research, however, may be new or adapted models of how actors act.

From these discussions, there might arise opportunities to discuss the more general context of access2innovation and how to improve the facilitated partnerships (helix) of future access2innovation projects, and maybe also that of operating within a Government Funded context (these are presented in the final chapter of the thesis – Chapter 9 "Reflection").

3.8 Delimitation

The delimitation section which follows, is an attempt at showing the reader that there are different perspectives that could offer valuable insights for this thesis, but which have been deselected for various reasons.

The thesis **addresses primarily the roles of the companies** in access2innovation projects, and **not specifically NGOs or other partners**. As such an exhaustive study into all the actors in the partnerships is not conducted, i.e. the actors who become part of the access2innovation program, other than companies, are not studied rigorously. To study the processes of a single actor in relation to one or more other actors, could benefit from studies of the processes of these other actors. But this thesis only studies the processes of companies, and treats external actors as contributors to these processes, but this researcher does not study the processes of these other actors. If all actors were to be studied in a process perspective the researcher would have to follow all actors over time, which is not possible in the context of this thesis.

The potentials of the commercial projects cannot be fully understood without considering **macroeconomic constraints and enablers**; e.g. the potentially major issues of business such as corruption. However, as research into these areas of interest is beyond that of access2innovation and is also research conducted elsewhere in greater scale and scope, it will not be addressed here in any greater detail.

The concept of "**business models**" is applied throughout the thesis as an appropriate approach to doing business in places like Sub-Saharan Africa. However, the concept is not discussed but only taken implicitly as a valid mode of doing business. Processes of creating business models then is implicitly understood as a valid approach of business in the context of this

thesis and the vocabulary of business models is assumed and not explicated in its entirety.

However, by studying similar efforts to that of access2innovation, the Wharton School and researchers (as mentioned in the introduction), who also assist companies in gaining access to these difficult markets, have chosen to adopt another term to address the issues of business models and validation: the term '**uncertainty'**. Then uncertainty will here also be addressed (in the next chapter), but only instrumentally and only in adherence to the Wharton School perspective. In other words, the term uncertainty relates to a specific understanding of the conditions the companies are thought to have to deal with, but the thesis makes no attempt at informing or redefining the term "uncertainty".

As the main field of interest for this thesis is centred on commercial enterprises and their activities when trying to deal with emerging markets of Sub Saharan Africa, the theoretical field of **Entrepreneurship** seems pertinent. Entrepreneurship deals with many aspects of overcoming difficulties in creating new businesses and solutions and also deals with uncertainty, challenges of finding viable customers and a plethora of other valuable insights. But adjoining these perspectives to the already considerable field of Sense Making and Process Theory would require academic pursuits beyond the time and resources of this researcher, including the risk of not contributing to this field of study. The entrepreneurship discussions might not be contributed vastly from the discussions in this thesis, as the context of access2innovation and the actors who partake in them are the primary beneficiaries of the research and not entrepreneurship as a whole.

Innovation theories are also considered as possible contributors to this thesis, but as the near ethnographic depictions of access2innovation here does base much on the works of Ravn (2012) who in his thesis did elaborate on this, it will not be explicated here.

Ravn's thesis also discussed **Facilitation** and **Network** perspectives in access2innovation to highlight the challenges of cooperating across sectors, thus alleviating a need to exhaustively explicate such issues here.

The theoretical perspectives that do become substantially explicated for this thesis are related to Process Theory and Sense Making. Sense Making is a field of study with definable origins and relatively demarcated sources of literature (chief amongst which is Carl Weick 1992, 1995 and Weick et al 1990) where Process Theory is not as such a narrow field of academic study. To study the processes of actors is essentially a sociological study, where

'processes' are quite fundamental to the study of human behaviour. But process theories are not generic. Theories of processes are linked to certain specific conditions, such as the processes of *motivation*, where researchers discuss *how* motivation occurs. Or theories of the processes of conformity, as studies of how actors end up conforming and so on. There are likely quite numerous applications of theories of process in different circumstances. As such there is no specific line of inquiry that suggests a generic theoretical field called "Process Theory". However, there have been attempts at collecting contributions from researchers in different fields that discuss what *organisations* do, and essentially the *processes of organisations*, which are the studies of *how* organisations organise. Therefore, the limiting field of interest for this thesis is *not* all sorts of processes of actors in all sorts of activities, but primarily the processes of actors who attempt to organise commercial solutions. The interconnectedness of the relatively well-defined field of Sense Making and that of the more abstract field of Process Theory will be the main source of academic interest for this thesis.

The purpose of the thesis work is not to test a preconceived perspective of what should take place as actors act, but to get some indications of how actors act – regardless what has been assumed should happen. Goal theory et al then are not pertinent although they do lend some insights. But again, the study hopes to discover the actions of actors, without adhering to preconceptions of what *should* be happening, and from there form some sort of greater understanding of their actions.

3.8.1 Changing theoretical perspectives

The outset of the research (January 2011) conducted for the PhD thesis was based on a quite different idea for the PhD.

The role of this researcher in access2innovation was to consult with the attending businesses and to enrol them into the access2innovation program and provide them with support in terms of increasing the companies' chances of success when going to Sub-Saharan Africa. And the **main tool provided** for these activities was the Business Model CANVAS (Osterwalder et al 2010). And it was thought that the companies would take this model and try and approach the business they were heading into by adopting this approach.

The **original** purpose of the PhD was solely to learn **how actors create business models**, however over halfway through the time allotted for this research did it occur to the researcher (around December 2012) that the actors **did not** as such create business models, or at the very least, the companies might be working with a business model approach, but if they did

it was in way that was not imagined by this researcher. In other words, the initial idea of the thesis work was proving to be more difficult than planned.

The **original** data collection was designed to discover a phenomenon of business model creation, which does not take place in practice (another presentation of these changes in research is found in the method chapter, section 5.4). A particular realisation had dawned on this researcher: the companies who entered the access2innovation program were given courses in business model approaches to business, and instructed in why this approach is valuable – but none of the companies adopted this approach of doing business.

This led to a new realisation: this researcher had assumed something about companies, which seemed to be invalid. There seems to be a greater need to understand the companies in the access2innovation program **more widely**, to learn what it is they are doing.

Then **a new direction of study was investigated for this thesis**, where the **existing** data already collected would be revisited but with a new vocabulary to make sense of the actors as they act. In other words, the data would be investigated to learn what it is that the actors are doing more generically, **leading to what is now a study of Processes and Sense Making**.

The delimiting factor then is that **there has not been a direct line of hypothetic-deductive reasoning from the outset of the thesis work until committing it into writing here.** However, the researcher's own process of realising that there was something not fully understood in how a Business Model approach is to be facilitated by actors such as access2innovation, only created an even more pertinent field of study.

Thus, the state-of-the-art of this thesis is the gap in understanding what it is companies do when partaking in facilitated processes such as that of access2innovation, and the contribution of this thesis is to fill that particular gap.

The theories, models and terminology utilised to make sense of the activities of actors – Process theory and Sense Making, are then primarily drawn into this research as potentially good interpreters of the data that has already been collected (in other words, the data came first, and the theories and models came after to interpret the data). The theories and models are then not deliberately chosen, because it is thought that the research conducted here will be able to contribute to these theories and models (deduction). **In yet other words, the models and theories are included to the degree by which they are able to sensitise what it is actors do in practice**

(access2innovation and similar projects), and not included as a matter of informing these models or theories.

In practice the author did have problems with understanding the data as collected through action research in a business model perspective, and through conversations with other researchers the idea behind sense making et al emerged, and by learning this new vocabulary the data started to make sense. Thus, choosing sense making et al, was not because the thesis attempts to fill a gap in sense making or process literature, but because this literature seems to able to make sense of the data.

In section 4.3 the ontology of the theories will be explored further.

In the Reflections chapter (Chapter 9) more of the alternative theoretical perspectives will be discussed.

3.9 Thesis overview

- Introduction
- Theory
- Methodology
- Cases analyses
- Discussion
- Conclusion
- Reflections

The theory chapter will follow shortly (chapter 4), which addresses the theories of processes and sense making, which is also a chapter that discusses in part how to study processes (i.e. a methodological discussion of process theory). This chapter also addresses the particular definition of uncertainty as understood in this thesis. Then the overall methodology of the thesis is presented (chapter 5). The cases and the analyses of these cases will follow (chapter 6), which is followed by a Discussion (chapter 7) of the findings and what they might mean. The conclusion (chapter 8) seeks to collate the findings and answer the research questions. The final chapter (chapter 9) consists of reflections on how the findings may form new discussions in research and how it may come to influence the practice of facilitated intermediaries such as access2innovation, reflections on the methods applied and reflections on alternative perspectives that could have been applied and finally the reflections on the contributions of the thesis.

4 Theories and Models

Chapter abstract:
First part of the chapter discusses what uncertainty means for this thesis and the actors under study. Uncertainty is a definition taken from other researchers who identify the context of places such as Sub Saharan Africa as something that is beyond risk. Dealing with risk in business is one thing, but alleviating uncertainty in business can be something altogether more substantial. The relevancy of uncertainty for this study is to highlight the special circumstances influencing the processes of businesses seeking to develop solutions in the context of e.g. Sub-Saharan Africa.

Second part of the chapter addresses process theory and sense making. The different contributions from literature within these fields are highlighted and the vocabulary found suitable to sensitise the data are chosen. The main perspectives taken from the discussions of literature, that will eventually structure the analyses that will follow in a later chapter, are:

- *Sense making*
- *Enrolment*

Sense making discusses how actors make sense of events and organise activities over time. Enrolment is part of this overall sense making discussion and it is deemed an important process of actors, as solutions require the coming together of different actors – human and non-human. The particular challenge of uncertainty and enrolment can be sensitised by the term 'blankness', which indicates an actor that is blank so that others might inscribe it with attributes: a significant element of learning is the ability to allow other actors to create meaning of the solution that is being developed.

Validation, which is part of Enrolment processes, is also highlighted as an important process when dealing with uncertainty, as the process of validation is also a process of learning. And particularly learning, over time, if the actors and solutions have any viability.

Each of these are addressed and supported by definitions of meshing, verbification, stabilisation, routines and others.

4.1 Uncertainty

To be uncertain can be many things, and of course not all perceptions of uncertainty are pertinent for this thesis, e.g. uncertainty about domestic issues, children's school, health, stock market changes etc. For an entrepreneur trying to create new solutions regardless of context, is a matter of dealing with not having any guarantees and therefore cannot know if one's idea will become a success. So, there are uncertainties. However, as the thesis is an attempt to discover the processes of how businesses organise solutions in relation to difficult markets in Sub-Saharan Africa, a special interpretation of 'uncertainty' is presented here.

First of all, there are always uncertainties, in particular when creating any new business or solution. However, dealing with uncertainties at this abstract level, is *not* the perspective in focus here. It is *not* principally interesting to discuss the generic uncertainties of creating a business; uncertainties that are probably fundamental to any business.The discussions throughout the analyses that will eventually follow later, cannot be removed from including a discussion of how an actor deals with something that is uncertain, in any abstract sense of the word.

The problem is centred at Sub-Saharan Africa and the particular problem with uncertainty of doing business there. And the specific interest in this exact way of thinking is based on:

1. As a facilitating intermediary, access2innovation hopes to contribute to the processes by forming activities that can help partners create solutions, and one of those activities is to draw upon research.

2. And research reveals, as was mentioned earlier with the Wharton School program and which will become clearer below, that to do business in developing countries is to do business with a developed sense of awareness that things cannot be expected to be anything like what is familiar.

3. So, the term 'Uncertainty' here is specifically adhered to an understanding of doing business in a special context – in relation to the purpose of the facilitation administered through the development initiative access2innovation.

The idea of uncertainty here then, is limited to the perception of uncertainty related to doing commercial business in regions such as Sub Saharan Africa, and the difficult dynamics of investing time and resources into that which one has no prior knowledge, experiences or gauges by which to navigate.

What research reveals. and what facilitators of access2innovation hope to show our partnering companies, is that the processes of alleviating uncertainty start *before* any attempts are made at implementing a business in this context (as with the Wharton School program, and indeed Kubzansky 2012, Prahalad 2009). In practice the partners of access2innovation are informed to be vigilant and open-minded about what is important to investigate *prior* to implementing a business.

Where the Wharton School (WSWP program mentioned earlier) performs such investigations *for* the companies they work with, in access2innovation facilitators hope to prepare the companies in such a way that *they themselves* perform these investigations. Entering a new market may for companies be mostly about securing permits, import issues, sales and marketing activities, warehousing and distribution, but in places like Sub-Saharan Africa many other factors *could* be important.

If a Dane would hope to enter Sweden to do business there, the mental gap would probably be insignificant, as how business is done would not be perceived to be very different. Entering the market then becomes a matter of juxta-positioning a Danish business practice with a perceived Swedish business practice, and there is a good chance that most of the good practices in Denmark would be applicable in Sweden.

The *context* of the projects here, which this research has been only a part, is set in specific understanding of *uncertainty*, as the emerging markets (such as Uganda, Tanzania etc.) have been documented as being particular demanding to enter for foreign companies (Thompson and MacMillan 2010). Uncertainty here is very much linked to the insecurities and uncertainties about principally *everything*. This is not to say that businesses looking to do business in Europe do not experience uncertainty, but businesses would tend to not *perceive* operations there in the terms of *uncertainty*, but as a matter of *risk*. Thompson and MacMillan (2010) have worked with businesses accessing emerging markets and they choose to adhere to an understanding of uncertainty as understood in the context of emerging markets as *near-Knightian-uncertain*.

The distinction is taken from Frank Knight who in 1921 (quoted by Thompson and Macmillan, p. 291) wrote:

"If you don't know for sure what will happen, but you know the odds, that's risk. If you don't even know the odds, that's uncertainty"

Research on businesses targeting emerging markets such as those of Sub-Saharan Africa show that one must expect it to be different from conventional business, as mentioned repeatedly throughout this thesis, but as yet undefined approaches are needed, due to the lack of certainty about almost everything there, compared to for example a European setting. One cannot, in other words, expect to endure a business venture in Sub-Saharan Africa with an approach of *calculating the odds* of succeeding.

If a Danish business actor requires electricity to work his business in Denmark, then he would most likely be able to obtain electricity – not *necessarily* so in Sub-Saharan Africa, and as a consequence the Danish business decision maker may *not consciously* consider energy to be a potential problem, but literature suggests that he *should* consciously investigate if energy is available in Sub Saharan Africa, *prior* to engaging the market (e.g. Kubzansky 2012 who addresses the issue by calling for actors that look to these difficult markets, should do so through a 'business model approach'). So, the business should enter into a Sub Saharan Africa setting with the awareness that none of the things subliminally thought to be in order, are in fact in order. One must attempt to create certainty about all aspects of what the business will be dependent upon, *before* trying to implement the business.

If a German business operator needs advice on tax issues and legal advice on statutes or legislation in France, then he would most likely be able to obtain it through law-firms, government bodies etc. – not *necessarily* so in Sub-Saharan Africa, thus the awareness and attentiveness of the commercial actor should reflect that nothing might be as expected – and the commercial actor should investigate such issues *prior* to engaging the market (e.g. Thompson and Macmillan 2010, who stresses the need to survey the market conditions prior to attempting any implementation of a business). More stringently, dealing with uncertainty is a matter of *consciously* trying to ascertain if different conditions apply or not, instead of assuming them to apply. It may seem to be a very fragmented discussion, but the idea that a commercial actor working in the markets of Europe will not deal with problems before they arise, is a matter of actually being able to deal with problems because the institutions (physical and non-physical) that can help alleviate problems do exist, and are readily recognisable, in Europe. But to do business in Sub Saharan Africa one cannot simply assume to be able to deal with problems that arise – when they arise – because the institutions that are needed to help solve problems might not exist, or for that matter, they could exist but in different forms, places, functions etc. (e.g. Luiz and Ruplal 2013, who exclaim that for investors in mining in Africa the main problems are linked to security of tenure, political stability and poor infrastructure - in other words, issues that are identifiable long before any investment is made, and they are also issues that are not core

to the activities of the company. So, for the company to study the market is not only to look for customers – but to look for all other important aspects and see if they suffice or not).

To do business in the Western economy could by virtue of its relative maturity and stability of political and resource infrastructure be a matter of *playing the odds*, or to *assess the risks*, where doing business in Sub-Saharan Africa is *much more uncertain*. Another expression, which gives substance to the special approach to uncertainty of this thesis, is *Institutional Voids*. Markets such as those in Sub-Saharan Africa have significant institutional voids (Rose and Chung 2012, Luiz and Ruplal 2013) when compared to how e.g. Europeans rely on institutions in the Western Economy. There are significantly different ideas of commerce, business culture and other conceptual institutions, as well as a lack of physical institutions of legal support, government offices, tractable energy supply etc. (or as mentioned above, institutions are probably there but are unknown, or unrecognisable). Essentially, businesses vying to access such difficult markets must *consciously* contend with uncertainties about almost all the institutions that one might have come to rely on in home markets. This is what is meant with 'uncertainty', and this creates the background of the research undertaken here.

In yet other words, actors *should* investigate all possible institutions, physical as well as mental institutions (according in particular to Thompson and MacMillan as mentioned earlier), that could have a bearing on the company, as there is a likelihood that these institutions are either fundamentally different, or completely absent in such markets.

The reason for bringing the term uncertainty to the foreground is that the context of where the business cases studied here intend to operate is significantly different from what is familiar to them, will have a potentially significant impact upon the *processes* the businesses go through. Indeed, *how* businesses choose to approach the markets *should* reflect the uncertainty of these markets.

A simple example: if a business is centred on delivering certain Fast Moving Consumer Goods (e.g. food products) to and fro different locations in Tanzania, one might expect to have to spend significant time and resources securing license to operate, a factory, sourcing materials upstream, contracting a transport company to ship the goods and many other things. And to some actors e.g. the transportation part of the business might mentally (institutionally) be assumed as something easily found as it is "usually" only a matter of contacting 3 or 4 transport companies and have them quote offers (as might be customary in Europe), and then choose the best of the quotes.

But in Tanzania it can be costly mistake to simply assume anything like the presence of a suitable transport company. The solution to such a problem could potentially be found in creating one's own transportation company, incredulous as it sounds (e.g. FanMilk in West Africa, a Danish owned dairy manufacturer, found it crucial to be in control of transport and logistics so they purchased a logistics company – so the company needed to go beyond their core dairy business and go into logistics operations – in order to secure their core dairy business, Interview with CEO of Fanmilk 2011).

Uncertainty then, as it is understood here, is about significantly *more* or at least potentially *different* traps for businesses to fall into, compared to familiar markets and indeed to the more conventional understanding of entrepreneurship. What is available in literature on matters regarding Sub-Saharan Africa, maturity of markets, accessibility, how easy it is to do business etc. can be found in the vast works of the World Bank, but these offer general (quantitative) statistics only highlighting the general outlay and macroeconomic view of a particular country's conditions on different subjects. *How* to deal with local and regional uncertainties must be understood (qualitative) contextually, which is not available in literature.

The interesting part of this study is then also to come to understand how access2innovation facilitators come to address this topic of uncertainty towards the commercial partners, and to what extent these commercial partners act as a reflection of this.

4.1.1 Perceiving uncertainty

Perception of uncertainty is relevant, as the act of studying companies as they are to go to Sub-Saharan Africa, as they receive or are confronted by research telling them that to do business there is a matter of discovering all aspects of the business and alleviating uncertainty etc., is also a discussion of how these actors *perceive* uncertainty. Simply put, if an entrepreneur, even after being put through numerous meetings, workshops etc. about how research shows business should be done in Sub-Saharan Africa (which is a great part of the services provided in access2innovation), choose to do whatever he was thinking of doing anyway, then he might not *perceive* the business he has in his mind as uncertain, but just a matter of risk. So, an analysis of how or even if an actor *perceives* uncertainty, is relevant, as it could be suggested that an actor that does not perceive something as uncertain would most likely not act in accordance, which in turn might explain part of why the facilitators of access2innovation fail to grasp what it is that companies do.

Sorensen et al (2007) discuss uncertainty and decision-making and make specific notes about the human relation to uncertainty, and *the challenge of*

even recognising uncertainty, albeit with a more abstract definition of uncertainty than has been presented in this thesis thus far:

"... the human relation to uncertainty is divided into two categories: (1) Recognised ignorance and (2) Unrecognised ignorance. Recognised ignorance covers lack of knowledge, where it is known that this knowledge is missing. Contrary, in case of unrecognised ignorance, the lack of knowledge is not recognised. This division of uncertainty is based on the limited human capacity of analysing missing knowledge and variability. Obviously, the unrecognised uncertainty is the most critical enemy of any scientific analysis."

Indeed also for this thesis.

As will become clearer in the analysis in the second part of this thesis, the actors analysed here have varying degrees of expressed recognition about the uncertainties related to the context in which they wish to do business.

To reiterate, but with use of different words: the interest in emerging markets is not to see how businesses deal with certain *markets*, in particular as markets are difficult to evaluate in e.g. Sub Saharan Africa (Jerven 2009). The interest is to study actors and how they create solutions when the potential for re-using known ideas and techniques is low – in yet other words – to study actors as they try to navigate unchartered waters, where their known methods and routines have little chance of achieving a desired effect, and where new ideas and innovations hold better potential for success.

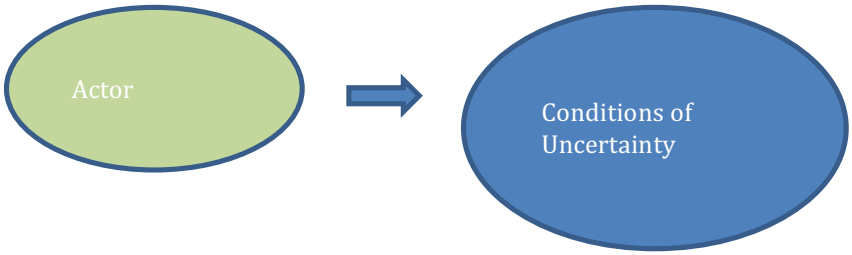


Figure 6: Basic context of study
Source: The author's own work

This is important: this is not about dealing with uncertainty of operating in markets where *risk* is at the heart of matters; e.g. familiar European markets where actors are expected to conduct market analysis, supply chain

assessments and similar, but a matter of dealing with conditions *where even risk is unknown*.

The primary concern then is to understand how actors deal with uncertainty as depicted here (Fig. 6). However, there is another layer of understanding.

In access2innovation activities will at times draw upon research-based knowledge about how to do different things; e.g. how to access emerging markets, collaborate with NGOs etc. And in one particular understanding attempts have been made to convey to the commercial partners in access2innovation that going to Sub-Saharan Africa is a matter of uncertainty, and there are tools and perspectives useful to combat uncertainty; e.g. the tool of business model CANVAS (Osterwalder et al 2010) (Fig. 7).

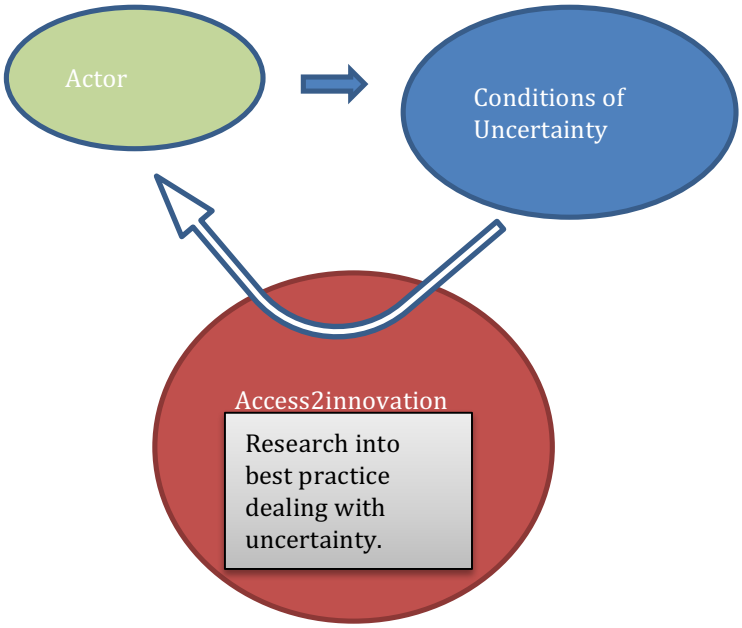


Figure 7: Study in relation to the overall case: access2innovation
Source: The author's own work

What this means is, and is important to understand regarding the impacts this thesis hopes to reach, is that access2innovation, as an intermediary, attempts

to affect actors by use of research based knowledge, and also by forging relations between these visiting foreign (Danish) companies with local contacts. Alleviating uncertainty is a matter of *creating knowledge* and part of that is to explore different sources of knowledge instead of jumping right into implementing a business idea, and then learning how to do business the hard way – a process research has shown (Thompson and Macmillan 2010, Kubzansky 2012) is not a viable path in places like Sub-Saharan Africa.

The intent of discussing uncertainty is that the researcher *expects actors to act according to the special requirements of doing business in Sub Saharan Africa,* which essentially means that the researcher expects actors to perform certain actions in relation to seeking out business opportunities in Sub-Saharan Africa, through the help given to them by access2innovation (some of these actions are defined in compelling ways in the process theory chapter that will follow shortly)

And a few of the **driving hypotheses** of this thesis are:

- Actors may not even *perceive* the business they are about to perform, in light of uncertainty, but as risk.
- Creating new solutions, which also includes creating *new ways of doing business (*a business model approach), and not only new technologies, then are what is expected of the actors taking part in the access2innovation program.

It must be mentioned that the perspective of uncertainty, for this thesis, does take on a hypothetic-deductive reasoning, as the theory behind the perspective should be able to be tested. But because the research conducted for this thesis is post-rationalisation to some extent, the uncertainty aspect has not been rigorously tested. The uncertainty perspective will however be able to sensitise part of the ontology of thesis and the researcher behind it (more on which later).

In access2innovation the program is directed at supplying research based knowledge, and fundamental to operations is that the partnering actors should act by processes of validating their ideas and creating business models, which are processes that help alleviate uncertainty.

4.1.2 Dealing with uncertainty

If uncertainty is something to be avoided, then one must do something to alleviate it. But how?

Thompson and MacMillan believe to move away from uncertainty in business, is a journey much like this:

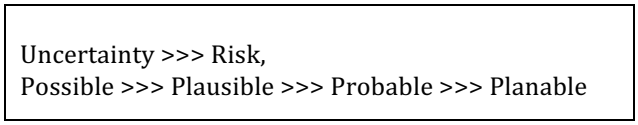


Figure 8: Process of uncertainty towards planable action
Source: Thompson and MacMillan (2010, p. 293)

Thompson and MacMillan suggest that moving away from uncertainty towards risk, where it becomes a matter of calculating the odds, are processes of taking the uncertain, creating knowledge that allows an actor to view possibilities, and yet more knowledge to lift an idea as being plausible, all the way to becoming planable.

'Planable' becomes a generic term for when actors become able to calculate risks.

In the access2innovation projects however, commercial processes do not follow stage gates models; i.e. there does not seem to be significant stages of first something becomes 'possible' then 'plausible' etc. Rather, the process of arriving at solutions is much more back and forth, where what seemed plausible becomes unrealistic with new light and new information through experiments or other. The processes which are not fully comprehended yet, are more complex and rely on something that does not necessarily fit specific points on a time line as the Thompson and MacMillan figure above suggests, and of which this thesis will make a contribution.

John Adams discussed Knight (cited by Thompson and MacMillan 2010, p. 293), and offers a wider interpretation of how to deal with uncertainty:

"Uncertainty as defined by Knight is inescapable. It is the realm not of calculation but of judgment. There are problems where the odds are known, or knowable with a bit more research, but these are trivial compared with the problems posed by uncertainty. If one retreats from the unattainable aspirations of precise quantification, one may find, I believe, some useful aids for navigating the sea of uncertainty."

Adams expresses a specific concern related to ***how* to deal with uncertainty**, in that it must **not become merely a mathematical exercise of quantification**; e.g. market analysis, return-on-investment calculations etc., but to **judge** if and how to overcome uncertainty. It must be said that Adams does not specifically speak of uncertainty in relation to commercial enterprise

nor of the context of Sub Saharan Africa as for this thesis, but his claims are here construed into the context of the thesis, even though he, through this researcher's interpretations, discusses the issues in more abstract terms of theory of science and knowledge creation.

To act out of *judgment*, speaks of a person's capability to not only rationally calculate, but also to have the capability to *sense* or *feel* the conditions – i.e. the view of uncertainty becomes the unifying perspective of the theories applied for analysis in this thesis. And in there somewhere is the idea of innovation, which arguably is about dealing with some form of uncertainty.

And innovation, as a perspective understood implicitly for this thesis, is a process of learning through experimentations. And as will become apparent later, innovations and ostensibly the alleviation of uncertainty includes processes of adding and subtracting actors over time – to experiment with actors.

Uncertainty then, is here understood as conditions where knowledge and experiences are very limited, and to deal with uncertainty *should* for the actor be a matter of *sensing* rather than *calculating*. Ostensibly to study actors as they attempt to **make sense** of the uncertainties is to **study their processes**.

To re-formulate the challenge of the study for this thesis:

- the actors are faced with uncertainty.
- they *should* deal with the uncertainty based more on their *judgment* or *sense making* rather than pure calculation.

In terms of methodology:

- to *study* actors, as they make sense, make judgments or try to feel what is the appropriate course of action, then is an exercise where a researcher cannot expect to find very calculable incidents (which expounds why there is little use for quantitative methods).
- there seems to be a special set of requirements on part of the researcher to even be capable of making such studies, chief among which could be empathy.
- This unfortunately decreases the study's reliability as there are no real assurances that the researcher can identify e.g. an event, how the actor makes sense of the event, translates this into action in any congealed form. The problem links to time. A new actor may enter into the picture, but only much later make sense to someone. The researcher may record an event, but the actor under study might only make sense of it weeks or months later to some other event or actor. It is extremely difficult to ascertain with any certainty of what

actions lead to other actions, and therefore also difficult to ascertain the processes of e.g. translation.

There are not many theoretical contributions, which offer meaningful ways of describing this type of study and the role of the researcher, and it is speculated here that the reason is that such studies are, in terms of scientific rigor, questionable. Although where this research in one respect is hoping to find actors who are portraying behaviour characterised by judgment and sensing, the opposite behaviour may be somewhat more obvious. As such, if the actors behave by use of calculative tools of budgets, plans and market data – only – then there is a good chance that the actor is not able to deal with uncertainty (this perspective of plans etc. will be further explore in a following section about Routines – see section 4.2.9). If the actor for some reasons does not seem to only rely on these calculative tools, then there is a chance that the actor might be dealing with uncertainty in some other more judgmental way.

To increase an understanding of this a range of different theoretical discourses will help expand the theoretical concepts.

The following is a presentation of theories of processes of sense making and enrolment.

4.2 Theories on the Processes of organisations

The following is a comprehensive, and yet not exhaustive account of how social science researchers from varying academic disciplines discuss the phenomenon of studying actors who act; i.e. theories of processes, what processes are and how to study them. The discussions include Latour, March, Weick, Callon and others, where the perspectives of journeying, becoming, actor-network-theory, blankness, enrolment and others are elaborated.

Tor Hernes (2008) has undertaken an ambitious task of increasing the understanding and overview of *organisations as process*[22]. Organisations take up place in a tangled world and that organisations are not *entities*. Entities may be discernible or made discernible so that they can be mentioned and discussed, but organisations are entwined in often indiscernible ways. To study them is to grapple with when one contour of an entity starts and another stops, as organisations have brittle boundaries and become enmeshed. Essentially to study organisations, such as businesses, is not simply a matter of typifying organisations as "being" something, but as something that is always evolving in a flux between actors inside and outside 'the organisation'. But for the purpose of being able to talk about organisations, organisations are *entified* into entities in order to be able to make sense of them. Latour coins these as 'black boxes' (Latour 2005) or 'complex unities' (Whitehead [1929] 1978) and they are difficult to analyse, and yet by entifying or black-boxing organisations into a unit of observation is an attempt at *"bringing together strands of a tangled whole according to some coherent model of expectations"* (Hernes 2008, p. xiv) hope to achieve *meaningful* and *predictable order* in a tangled world. However, to study process will, or should, remain open-ended as there are no absolutes or facts when looking at processes or organisations for that matter. The citation also includes a very important message: to study actors by *expecting* them to conform to something or other is questionable. To study processes should be an endeavour adept at describing what happens, and not only the incidents that conform to what was expected to happen. The understanding of organisations thus is to understand that organisations themselves attempt to create meaning and to form some order or stability in a world that isn't.

Processes are indelibly a study of interaction between immaterial events and/or material entities, where actors for instance can be defined in part by what they do to other actors, which is also a significant part of the Actor-Network-Theory (see section 4.2.4). This may be cause for enlightenment, but it actually muddies up the picture of process even more as to study what an

[22] Hernes is renowned for being an expert on Weick, whom is a main contributor to the theoretical perspectives for this thesis.

entity does, e.g. an organisation, is also to study what happens in the network relations of the actor in study, which would suggest that processes of other organisations and actors should also be considered.

4.2.1 Journeying

One expression found to be very helpful is to understand a *journey*. The word 'process' is derived from the word 'journey', and fundamental to analysing process is to analyse the journey – not the output of it. One explanation of journeying is:

"..the inter-relatedness of entities, how they transform each other...It is the journeying between the world and the attempts to model the world that is seen as the process." (Hernes 2008; p. xix)

The metaphor of journey expresses many different elements of how actors are likely to behave as compared to preparing and conducting a journey, a vacation, a travel; i.e. where do they think they need to go, what will it take to get there, during the trip the actor is taken on another journey etc. etc.

Within this researcher's understanding of the word journey is also the fundamental questions of sense making as provided by Weick et al (2005): "What is the story here?" or "What is going on here?", and the subsequent question: "What do I do next?". And if these types of questions are those that will become key for the following.

4.2.2 Becoming

To study process is to recognise that any state of organisation under observation is only one of many potential outcomes of the numerous processes behind it, and this is why studies of processes can yield a much greater detail of what has transpired and why and how things become. The challenge for the researcher is to allow an open-minded approach and to appreciate that the actors might act based on a plethora of meanings prior to an action, and that there are no simple causal connections. Or more to the point, the actor is never fixed in a certain frame of understanding as he is in the process of becoming, and is always becoming something. From a research perspective, this means that the researcher must recognise that there are no simple causal linkages from past to present to future, and entifying an actor as being the product of specific events in time then would not give way to an understanding of the processes the actor goes through.

This of course is not unilaterally seen as a good thing in science as such studies are more intent on studying that which is *becoming* rather than *outputs*, which ultimately leaves studies of processes as quantitatively less rigorous – or as action researchers would argue (see Methodology chapter 5) that knowing is more important than knowledge. But to expect *generalizability* of any actor's interaction with immaterial events and other material entities is to assume that which is not possible. Rather, a greater sense of modesty must be acquired for the study of processes to unfold more open-ended.

Law (1991, referenced by Hernes 2008 p. xviii) offers this deliberation of studying sociology and processes:

"And when [sociology] has done better, this has often been because it has concerned itself with the description of social processes. Such descriptions simplify, for to tell a story about anything is already to simplify it. But they are less prone to heroic reductionism than some, for they also tell, or at any rate they assume, that they are incomplete. And they tell that they are incomplete not because they haven't quite finished sorting out the order of things, but rather because they know that it is necessarily that way: they will always be incomplete. Such sociologies are relatively modest, relatively aware of the context of their own production, and the claims that they make are relatively modest in scope."

If researchers then are to comprehend what it means to study processes, they must first acknowledge that there isn't a predefined output of the analysis, and that the analysis will never end. All things are becoming, unless of course they have died and become extinct. But even then, something new will arise. If the commercial actors in these studies, have all started on new business endeavours in relation to Sub Saharan Africa, it does not suggest that they are completely without baggage carried over from their past and other commercial as well as non-commercial projects. Their aggregate experiences also inform them on how to act and make sense of things. To study entrepreneurial processes then are not significantly special compared to other types of actors and processes, as the differences that make a difference (Bateson 1972) can come from a plethora of different past activities. The challenge of studying e.g. new business ventures with no immediate pattern of behaviour or restricted form of action as an established organisation might portray, is that their behaviours are not always clearly visible to the researcher. This will be addressed in the discussions of *routines* in section 4.2.9.

A word on *material entities* and its potential connection to *non-material events*: To study the outcome of a process and the value of the outcome only

in terms of the technological functionality of it, compared to other technologies, is to omit important factors such as whether the technology is adopted. A Betamax video recorder technology had to succumb to the VHS technology, not because the technology was in any way inferior but because of other reasons, e.g. significant stakeholders supported the VHS standard thus elevating this standard over any other. Essentially the *process of identifying* what led the VHS-standard to emerge as the winner, cannot simply be understood in the technical attributes of the VHS technology.

Latour hinges the significance of this distinction on *relational* issues rather than on *substantive* issues. What *becomes* of a process must be understood as the interactions of other actors, technologies and communities. And yet nothing ever *is*, as everything changes, because things are always *becoming* and never reach a static state of *being* (Weick 2005). One entity will help transform another entity in a *perpetual state of change* (Hernes 2008), where any static picture offered by a static analysis would only inform that version of that entity.

4.2.3 Intermission

So far process theory for this thesis has only covered a few perspectives about what process studies is about, but only little in terms of *how* to study processes.

The main theoretical contribution on how to study processes will be taken from Actor-Network-Theory (ANT) as this perspective principally is a way of highlighting actions as the main interest. Or in other words, the ANT perspective encourages researchers to focus on actions and not on things that do not manifest themselves. The ANT perspective will become part of a broader discussion of how to study processes.

Essentially, the ANT perspective provides a better understanding of what it means to study people, entities and non-material events, and adhering to the perspective may afford a better opportunity to *learn* what actors do. The remainder of this theory chapter will attempt to address some perspectives, which may further develop a vocabulary that in particular seems pertinent when trying to sensitise the processes of actors who have to deal with uncertainty.

4.2.4 Actor-Network-Theory (ANT)

The following is an elaboration on what Latour's work on studying 'the social' means for this thesis, in part because the perspective, with the general ideas of social studies, is very much a matter of studying processes, and in part because Latour recognises the immense complexity it is to study processes. First the Actor-Network Theory (ANT) is addressed in short.

ANT has maybe been referred to as the work of Latour, but others have joined in and made interesting contributions of e.g. Callon and Law.

Latour believes (or believed as his mood has changed over the years) that ANT is not a management theory or a tool to provide a positive. It is a method, and even a negative method. What this means is that, in order to *learn* what happens in relations between actors is a process of learning with the purpose of understanding what actors *actually* do, and not what they were *supposed* to do. And ANT cannot tell any process researcher *what to do*, only what *not* to do.

"ANT is a method, and mostly a negative one at that; it says nothing about the shape of what is being described with it" (Latour 2004)

Latour's motivation for developing this concept is rooted in a rather disruptive idea of social sciences. He has stated that social scientists are basically doing it wrong (Latour 2005). Social science tends to be subjective, interpretive and leave too much to discussion. Latour thinks researchers should return to empiricism and let the data talk, instead of inventing what is good and bad and trying to make it fit with reality. But that is not to say that Latour offers a positivist approach, but only that data must come first. If something is 'thought' to be hidden, then it should stay hidden and not be looked at by researchers. Just because a scientist thinks something sinister and subconscious is happening then this thinking must leave a *trail*, and the trail researchers can pick up. If there is no trail, there is no science, only speculation.

For this study then it is important that this researcher does not attempt to *assume* something hidden is guiding the actors somehow, and dedicate energy towards the activities and relations the actors have, which leave a trail, and if the researcher does fall upon something interesting, which has yet to leave a trail, it is then put forth for other researchers to carry on the work of uncovering whatever phenomenon that has been stumbled upon. However, as will become apparent through this and the next chapter, these principles are not followed strictly for this thesis.

Tools are from the earliest work of Latour also considered to be contrived and offer very little, as they too tend to purport a "better idea" than the actors have, which is frustrating to Latour (at the time, but he has since wavered a bit on this position). Tools are here understood as preconceived theories or models where Latour believes that data should come first, as actors rarely if ever, take actions based on some sort of predefined framework.

"Have you ever met a painter who began her masterpiece by first choosing the frame?" [23]

So, Latour does not think that actors follow frameworks or use tools – they do as they do (which we in access2innovation incidentally discovered also when actors did not use the Business Model CANVAS tool, even after our best efforts of trying to convince them that it is very useful with the job at hand).

Latour basically finds it troubling that social science has to be conducted with limitations, but scientists must do what is possible.

In essence Latour addresses a research design topic, which is interesting for the study of processes (and the process research conducted for this thesis will be addressed more in this chapter and particularly in the next chapter)

But now a discussion will start as a clarification of the approach of Latour and others, regarding *networks* and why it is relevant to *not* do some things when studying the processes of actors.

4.2.5 In-here, out-there

Especially Latour laments that there are no real linkages between what goes on "out-there" leading to an understanding of what goes on "in-here". His perspective is significant as there is a vast difference between understanding e.g. organisations, as actors who act due to outside agency or pressure, or as actors who continually affect others as well as being affected by others. To study what goes on "in-here" in relation to what happens "out-there" would also require a bridging exercise, which Latour, states is far too rudimentary and the problem of established social sciences. There are no obvious causalities! What this means, for the analyses, is that one cannot expect to study the processes a business in a linear fashion, and least of all not when considering businesses as part of a network of actors.

[23] Taken from http://www.ensmp.fr/~latour/articles/article/090.html which is located on Latour's website at http://www.ensmp.fr/~latour/

For example; subject A (a person) seems to have a certain opinion on a certain topic, which looks like a barrier for further developments. Then subject A attends a seminar with a management celebrity (who then is an actor 'out there') who is able to change the mind of subject A ('in here'), so now subject A acts differently. It is a very palpable and easy to describe turn of events in the processes the subject goes through, but is there any "truth" in the apparent causal connection? This is doubtful, as any actor never changes direction for singular reasons. Let's entertain the idea that the event with the celebrity management coach did tip subject A over into to a new way of thinking, the processes that led the subject to stand at the edge of teetering over, might be defined by a plethora of different past events – and the management coach only provided the last drop that allowed things tip or pivot.

Figure 9: A man choosing direction to take
Source: Own creation

Imagine that a person standing on the North Pole (Fig. 9). Any direction he goes from there is significantly different from any other direction he chooses. It is all South, but is it towards Europe? Asia? Or somewhere else. Something or someone can then influence this man to go in one way or the other. But is the thing, person or event that tips this person over, or influences the person to go in some direction, really the most interesting thing?

Figure 10: Understanding how the man got there
Source: Own creation

An incident or event may seem to push or influence an actor into a certain direction, but how the actor ended up in that situation in the first place (Fig. 10) is at least as interesting. If the event that seems to be able to change a person's behaviour, then it has been able to change the behaviour because it fits with the way the person got to that point where the event becomes influential.

If some other person experienced the same event but did not appear to be changed by it, then it is not only the focus event that is crucial, it is the plethora of events the person has been through prior to the observed event, which is also crucial to understand

So, to simply assume that condition 1 followed by a clearly identifiable event leads to condition 2, is far from revealing. The problem when studying processes by taking a snapshot in time, witness an event and then taking a new snapshot after the event, and then comparing the snapshots, only reveal one condition of the actor, and then only with very limited scale and scope. Weick (1995) also discusses this but in terms of "bracketing" in that actors when making sense of events they may put into brackets of what they mean, in order to deal with them (black boxing), even though nothing ever is. Bracketing is also an activity to help boil down an event into a point in time;

i.e. that a certain happening in a certain specific time makes sense to the actor (which the above example of standing on the North Pole is an example of). From a researcher's perspective, where the objective is to understand the changes the actors go through, then could be akin to entifying or bracketing events or actors in order to study them – and essentially make sense of them. But as has been attempted to highlight here, events are not demarcated in time as having a singular power of changing an actor. To this researcher when interpreting Weick, to study actors as they change, or are thought to change, is a matter of *not* trying to understand actors based on singular events. One must try and understand the actors with as many contributing factors in a process perspective to understand them, and not simply deduce that singular events in time are powerful explanatory enough. In yet other words, access2innovation and other facilitators should e.g. not assume that because an actor participated in an organised event such as a workshop, that it was because of the workshop that the actor succeeded in something later. Reasons for succeeding cannot be attributed solely from one event.

Let us continue the imagined example from earlier with the subject who attends a seminar, and try to predict what happens next for the subject.

The actor (subject A) is after his encounter with the celebrity management coach now forever transformed into a new way of thinking? All his actions will be directly linked to this new state of mind? Of course, this is a futile exercise as it hopefully becomes clear to most people, that it is impossible to predict human actions with any accuracy. But if an actor has *repeatedly* acted in some way then it would stand to reason that the actor does something that is not just fashionable or temporary and which then would indicate something that is truly part of what makes the actor who he is. And yet, researchers shall still be wary of making any simple conclusions that an actor, who portrays a new pattern of behaviour after going to a seminar, does so because of the seminar. Latour offers a perspective on this.

He believes that those processes that should meaningfully be understood or analysed must stand the 'test of time' and offer sustainability. An 'actant' as he calls them, is someone or something that in terms of the network has proven itself sustainable and therefore has stood the test of time. To study processes then is to look for actants it seems, and not fall into the trap of mentioning and attaching too much credit to events or actors that might still need to prove sustainable. Or phrased differently, "*actants are those that have experienced variations – and survived*" (Hernes, p. 69). This researcher will however criticise Latour and claim that it is impossible to follow an actor and know in situ if a process is worthwhile or not, unless of course a researcher is able to follow the actor indefinitely, which this researcher cannot. One might

indeed identify actants, but what of the actors that at first are dismissed, but later prove valid?

But what this researcher *can* do is to talk to actors about processes and actants that have already transpired and see which of them *survived* and which didn't. This though is questionable as one can only hope the respondent is able to recollect past events (which there is clear evidence against in the data that will come later) with any level of detail richness. But then again, one *might* stand a better chance of finding the real actants given the opportunity to witness them, but even that is difficult.

Re-cap: There is no real causal relationship between what happens out-there with what happens in-here, and yet what a researcher should focus on is actants, but an actant, as interpreted by this researcher, can be an actor that reveals itself rarely in the timeframe of the study, but becomes a sustainable actor (actant) potentially further forward in time than this particular researcher is able to study it. So too must the researcher of access2innovation consider that there might not be any direct linkages between the actions of access2innovation and that of the actors partaking in the projects. What should be considered is to study actors and the processes they are part of, is to try and draw out those incidents that are considered to be actants, but also to mention other activities for the sake of carrying over data to the next researcher who might look into continuing process analysis (thick description). Another way of considering actants; the actants that shall be the focus of this study, are not those that endure, but those that develop or change. This is related to innovation as trial and error through experimentation would suggest that things will eventually change over time in accordance with learning if an idea or product works or not, especially in the context of uncertainty!

Maybe the best offerings from a study of processes is to find, much with respect for Latour, that which the actors consistently *do not* do? Maybe a negative is another way than that of Latour considers it? Could the attributes of actors who act, be defined by what the actors do *not* do? Latour would suggest that this is futile and mimics the idea that the researcher "knows better". The context of this PhD however lingers on research exclaiming that actors *should* behave in a certain way, and if they do not behave in such a way, then they are actually *not* doing something. It will remain to be seen if this can be rigorously tested.

The theories of process underline the relevance of case studies as will be mentioned in the following methodology chapter and also, about "thick descriptions", as what could be extracted from the studies might make sense

to some other researcher in the future. Then the purpose of the process study is then two things:

- to explicate as much about the cases as seems even remotely relevant
- and to look for patterns that consistently are *not there*, as well as patterns that might prove sustainable (actants)

4.2.6 Researching and making sense of processes

Organisations are a product of process, or rather are *always becoming* a product of process, and the processes will include a significant portion of sense-making and in the context of uncertainty also judgement, as such to analyse them would also require a researcher to be aware of sense-making and to offer his or her own judgement as well. To acknowledge a study of process is however contingent on the understanding that research cannot be seen as a bystander, disconnected from the phenomenon studied. This in turn informs this thesis work in that to study process is to allow a researcher also to become part of the process (much as the methodology of Action Research purports as will be elaborated later). But phenomena, according to Latour, are not events that happen at meeting points in time, but are a collection of transformations seamlessly adding and subtracting properties to and fro actors. To study processes then is *not* to calculate them but to *experience* them (Hernes 2008).

In interest of combining the different perspectives mentioned in this thesis, the reader may recognise a similarity between the discussions here on viewing processes based on experiences, and the earlier discussion on uncertainty! Returning to the citation from Knight earlier, *to deal with uncertainty is a matter of judgment, not calculation*. There are no certainties, naturally, when trying to deal with uncertainties. Processes are fundamentally the same. There are only uncertainties about processes, and studying them, is more about *judgment* than *calculation*.

The actor-network theory suggests that sense making should not be understood in how the relations between actors make sense to the researcher, but how *the actors themselves make sense* of the interactions. This is significant, but maybe not only in the way Latour sees it.

The proposition of Latour and the actor-network theory of how to understand processes, as has already been mentioned, is that actors cannot be expected to conform to ideals of theories, models or researchers. Or to put this discussion into a question: “How do actors actually make sense of their processes, and subsequently of the other actors that influence these processes?”. Is the actor *aware* and *deliberate* or does he follow a

subconscious pathway? Is a researcher able to identify the events and actants without being part of the events and influencing actants? Can the researcher make sense of the events in ways that offer value to anyone but the researcher? If not, why should the researcher expect to analyse sense making on behalf of the businesses studied, as they would attribute value differently than the researcher? There are no clear answers of course, but there are some discernible teachings from having these types of discussions; and one in particular is *how to study processes*, or more accurately, how *not* to study processes.

Latour is first and foremost a contributor to discussions of how to do social science, and that his main proposition is that things cannot be put into boxes in order to describe them, and then expect truth to emerge. Equally the researcher cannot study the processes of the businesses within the access2innovation projects by black boxing actors. But the idea of studying processes, even with this word of advice from Latour, is not necessarily always possible.

Everything is entangled and not demarcated in any way, which in turn puts into question if Latour also creates demarcated entities such as the ANT perspective itself. He of course recognises this by saying: "*There are four things that do not work with actor-network theory: the word actor, the word network, the word theory and the hyphen*" (Latour, 1999b:15). But as Hernes elaborates, to call something by a name it then has a chance to move and change. Then to not call it something would make it difficult to discuss. Therein lies the challenge of studying processes, as the researcher would need to start calling different things different names, and make rudimentary linkages in order to discuss them – in particular as this deliberation has to be put into writing (this thesis). But in doing so the researcher is black boxing for the sake of expediency and 'clarity', but that does not increase the probability for 'truth' to emerge (if there is such a thing).

But to increase the chances of not completely missing the mark, starts with *not* assuming anything in the course of the studies. Well that is fundamentally not always possible, but a researcher can attempt to *become aware* of when something is assumed and then try not to let it interfere; i.e. follow the example from above, from Law mentioned earlier (see section 4.2.2 on 'Becoming'): "*Such sociologies are relatively modest, relatively aware of the context of their own production, and the claims that they make are relatively modest in scope*" .

The study of Latour and the subsequent teachings this researcher finds pertinent for this thesis contains several components, but the particular issue that studying process is not merely a matter of creating a list of activities that

the researcher *should do*, when studying processes, but more a *mental state of mind* that the researcher should avoid; i.e. try not to presume, predict or assume anything about the actors and their processes. And also, that the researcher should be aware that he might entify actors into identifiable objects, in order to increase the chance that others might join the discussions, but risk minimalizing that, which is not 'minimizable'. The study of processes and the theorisations behind them, as hopefully has become apparent, is very much a methodological discussion too.

But as social sciences are governed by paradigms, researchers must appreciate that researchers tend to want to stabilise in order to analyse, the antecedent of process analysis. The job it seems is to *approach* the studies of processes with a more phenomenological and paradigm free mentality (yes, it would seem this section just as well could have been at home in the Methodology chapter of this thesis, but it does not seem to fit with the 'ideal' of what a thesis *should* look like, with clearly demarcated chapters and sections).

Sensitising data collected for case studies then should then consider matters that are not directly linked to specific events, but to consider other actors and influences outside the specific actor under study. And this sensitising should then adhere more to judgment than calculation.

In plain terms, a caricature of what this means: If subject A is under study, and the theorised purpose of his actions is to reach goal X, then the researcher should study the actions that are purposefully leading to that goal. But if subject A spends 90% of his time at home in his kitchen baking bread (which in this example has absolutely nothing to do with his goal X) that is just as important, isn't it? What the subject is doing in terms of reaching his commercial goal (e.g. doing business in Sub Saharan Africa) must be understood in relation to *everything* he is doing, and *not* doing. Should the researcher only study the process of an actor only when the actions are confined to actions linked to the intended purpose? In this rudimentary example, it might seem relevant to discuss that subject A seems to be failing with reaching his goal X, not specifically for what he *is* doing about reaching that goal, but also for what he *is not* doing, or in this case, what he is doing that takes away his focus on reaching the goal. Even then something else might be afoot. Maybe the subject, by baking bread, reaches some level of energy or inspiration that translates into him actually reaching his intended commercial goal? Maybe the action of baking bread is something the researcher and the bounded rationality governing him has yet to fathom that it is a course of action that does lead the actor to reach his goal despite there being no obvious rational reason for this correlation of baking bread and doing business in Sub Saharan Africa? In any respect, the researcher should

be mindful in making observations and subsequent analyses based purely on an a priori understanding of what *should* be done by the actor, how it is done, how the researcher might think it is relevant, not relevant, good, bad etc.

To study the processes of an actor who attempts to do business in relation to Sub Saharan Africa is then also to study *everything else the actor does*. In the same line of thinking, it cannot be assumed that an actor (in-here) is affected by some other actor (out-there, e.g. access2innovation) simply because an event transpires between these two actors.

But relations matter, as is one of the cornerstones of access2innovation, and is therefore the topic of the next section.

4.2.7 Blankness and networking

Returning shortly to the introduction; solutions that are created in relation to Sub Saharan Africa become a matter of working together with others so that new innovations can be unearthed (the ideology of access2innovation) and there is no evidence to refute it. But what does "working together" or "networking" mean in terms of process theory?

When studying Latour's position on *stabilisation* and also that of quasi-objects coined by Serres (Brown 2002), the concept of *blankness* as a particular process of enrolment is discussed.

This is interpreted for this thesis as an important element of analysing processes in networks.

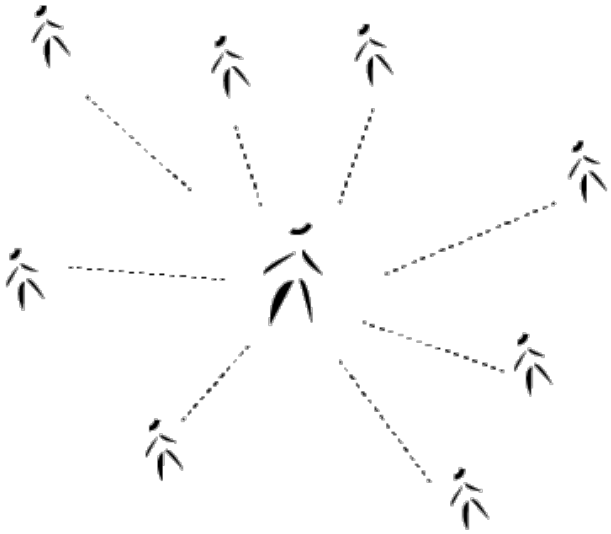


Figure 11: A graphic idea of how an actor is related to others
Source: Own creation

The discussion evolves around the perception of strength of networks and how actors *inscribe* other actors with attributes. Processes are an understanding of *processes of inscription into objects*. What this means is; to analyse processes is to analyse how objects are inscribed with attributes. Objects can fundamentally be anything, much like actors, but the idea of quasi-objects, which is understood as the object around which the *network* evolves.

"I have given the name joker, or blank domino, to a sort of neutral or, rather, multivalent element, undetermined by itself, that can take on any value, identity or determination, depending on the surrounding system that it finds itself inserted in. I can say that the joker is a king, a jack, a queen, or any number." (Serres 1983, quoted by Brown 2002)

In practical terms, businesses that might perceive that they stand to risk the most from collaborating with others would prefer to be the strong object in the network. But how does one achieve this strength? Middleton and Brown (2005) discuss the concept of blankness as an object or an actor who is the most 'blank', is the actor around which others can *inscribe* attributes, and exemplify by use of a neo-natal care unit.

"Neonatal intensive care work may be understood as a network in which doctors, babies, parents, technology, and medical care are associated together in a complex social topology."
(Middleton and Brown 2005, p. 695)

Hernes discusses this same case:
"Middleton and Brown go on to speculate whether the baby is, in fact, the strongest link in the clinic, despite its apparent fragility. But its fragility does not make it strong. The baby's blankness makes it strong, they argue, because its blankness is fundamental to the way the network is kept together. The degree of blankness requires that we seek to understand the characteristics of quasi-objects that enable networks to develop and to become robust or powerful. More blankness presumably allows for a richer repertoire of inscriptions."
(Hernes 2008, p. 72)

The 'blankness' then allows the object or actor to be attributed with *meaning* and thus is able to enrol other actors, and keep the network of actors together. The, in this case human, actor, who is able to become a quasi-object also, according to Serres, becomes sort of a joker. A joker that can be used or understood in many ways.

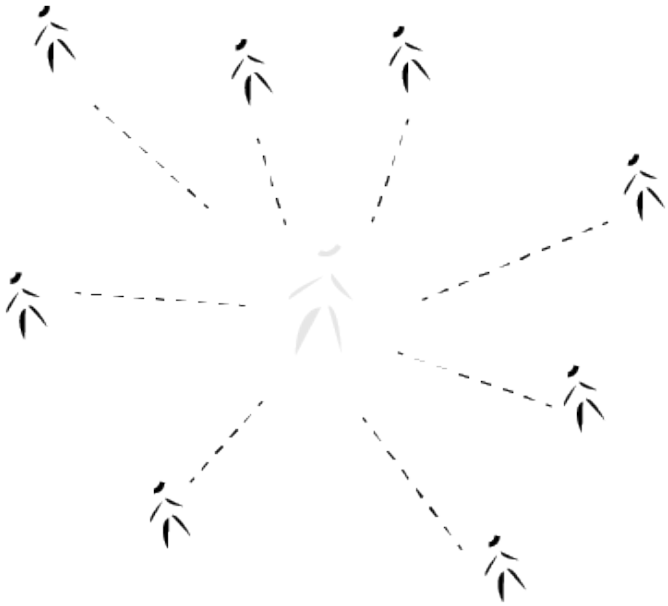


Figure 12: The central human of non-human actor - the quasi-object - is blank
Source: Own creation

When actors in networks then look to an object or actor and finds that the object or actor in focus can have many attributes, related to themselves, then the object becomes the strong link – because of its blankness (visualised above as a blank actor in the centre). Essentially, what the enrolling quasi-object (and it does not have to be a person) is perceived like by other actors, is someone or something in which the other actors can imagine a correlation and a way by which the attributes the actor wishes this object to have is something that can be inscribed. In a manner of speaking, the object is like a piece of paper with blank spots where outside actors can see themselves as filling out a blank spot. Much like the neo-natal baby would draw in a neo-natal nurse, as the baby is inscribed, by the nurse, to have attributes that draw in the nurse.

A practical example of how this researcher interprets the idea of blankness: If a person was thinking of creating a new music festival, this person would

have to draw upon many hundreds of people to help make it possible. If the person exhumed a strong and maybe even rigid position as someone who has figured it all out, has made all the strategies and plans and holds all the resources, this person might to some people be considered a "strong" or "powerful" actor. But to *enrol* other people the person in question would stand a better chance if he or she was a little more "blank". If he or she could absorb the attributes that others would like him or her to have, then they would be drawn to that person. If others, in other words, can *inscribe* these attributes or values, to an actor (in this case a human actor, but does not have to be), then they will be drawn to the actor. The quasi-actor would then by offering a certain amount of blankness be able to enrol others, and maybe also actors that might not immediately seem obvious, which is one perception of what it means to innovate and learn – to allow also unassumed actors to play a role in the processes – to experiment with alternative actors. The festival itself might be the quasi-object and have such blankness that other actors are drawn to it as there are opportunities for inscribing meaning to it and that the actor senses that the actor can inscribe attributes to the object that suits the actor.

The relation to Ciborra (2002) and the *bricolage* concept, is pertinent here. Bricolage is where actors assemble other actors from what is *available*, and *not because they are ideal*, falls within the concerns of blankness. Where a quasi-object may benefit from being blank in order to attract others, the quasi-object cannot hope to attract the ideal actors, but maybe only those that are available.

The main point in these discussions for this thesis is this: to study the process of actors as solutions are created is therefore also the study of actors as networks or relations are created or nurtured.

Returning to the discussion of blankness: the argument that quasi-objects and blankness purports may for some be rather abstract, so in an attempt to create meaning of what it all means, the concepts will be *entified* it into an object that makes it workable for the analyses.

For *ties* in networks to become *valuable* actors who offer some level of blankness, also allow other actors to inscribe their own value onto them. For the analyses here then, it would be interesting to learn if the actors of the cases studied here act in ways that can be attributed to some sort of blankness, or to introduce a dichotomy to the discussions, if actors act as the opposite of blankness – maybe saturation (with no room from contributions of others)?

The relevance of this perspective for this researcher is when the concern here is the study of businesses working in networks in the context of uncertainty; the role of the actor in the network must be understood too (and here concerns centre primarily on actors as the humans that make up the businesses studied here – so for this thesis a narrow perspective of blankness is utilised, i.e. human actors and their blankness). What an actor *chooses* to do will be reflected in the *role* he *has*, or *perceives he has* in the network. The decisions and actions are somehow a product of the role of the actor, which includes concerns of whether the actor is actually able to create the agenda of the network (Weick 1992) or if he follows others, and it would be interesting to learn if other actors are 'stronger' in forming the agenda of the network than the business. And the idea of blankness offers one way of making sense of this.

Looking at the importance of *enrolment*, Callon et al (Callon 1986, Akrich et al 2002) apply the term 'interessement', which is a French-English expression of the different propositions that are important to consider when enrolling other actors. The scallop case used by Callon to express what it takes to get a network of actors to solve challenges and to work together is interesting. The case is used to tell a story of a looming disaster (the extinction of scallops in Europe) and how biologists and fishermen utilise an already gathered experience from Japan where they too were faced with a similar problem but managed to turn things around (Callon 1986). Callon finds that there has to be an *obligatory point of passage*, a common perspective or goal of the challenge, and *roles* must be clearly defined in order for actors to come together and join the common cause, and these processes are referred to as *interessement*: the process of portraying the cause as something that the other actors can and would be interested in being part of.

Through this *common point of passage*, actors are *enrolled* and some become *spokespersons* to *mobilise* the *network* towards the greater cause.

But crucially Callon expresses that although these important factors must be addressed, one must also remember the *effort* it takes to attract actors and establishing a working network. The scallop case, although encouraging for its results and also the methods applied in enrolling and activating actors, must not overshadow the enormous time and resources it took to get every actor on board; in other words, the process of attracting others is long, difficult and requires many resources before they even start solving their problem. And the vast efforts required are due to the process of *translation*. To translate simply means to transform meaning so that other actors comprehend and accept them (Callon 1986), and it is important to recognise the effort that may be required to enrol actors through translation (which may be a more poignant way to describe the challenges of facilitating cross-

sector partnerships in access2innovation). In the scallop case, to shorten the case down to a point, is an example of how the *language* of biologists, fishermen and scallops must be translated such that all understand each other. Not easy by any means.

Callon has been *criticised* for using a military type analogy (Hernes 2008) that the biologists are recruiting people to their cause, and that there might be other strategies of enrolment. But also, and rather crucially, there must be situations where the challenge and subsequent goals change dramatically over time, thus altering the state of the network quite disruptively over time. Weick would argue (Hammer and Høpner 2014) that the attempt to *organise* actors and activities does not happen because there is a common goal, but due to the relations between actors (a study of companies that endure and become successful has been carried out in the Built To Last publication (Collins and Porras 1994)), where some of the attributes of the most successful business people can be understood not from them having a fantastic idea (a common point of passage), but from knowing deep down that they knew who they wanted to work with (a networked or relational perspective of actors). This is expressed more neatly by referencing Hewlett and Packard, who, although their fame derived from manufacturing IT products, made bicycle tubing in the earliest days, and in the beginning, they did not know what they were setting out to make, but they knew that they wanted to do it together (Collins and Porras 1993). The process of creating solutions then is not necessarily technological, but contingent on context or relations.

The enrolment of actors and the roles they fulfil are not defined by a common goal but by their many individual goals and relations. Common goals emerge later. The difference in understanding between Callon and Weick might not be fundamentally significant as the case in question defines sets of parameters neither of them seem to highlight – for example urgency. The process of enrolling others to a collaboration based on a looming disaster (the extinction of scallops = crisis or urgency) compared to a collaboration of commercial entrepreneurs tentatively exploring a potential new business opportunity (opportunism, not a crisis) would essentially be *driven* by something other than a crisis. The scallops would most likely be extinct if not the actors could come together, where in comparison a few entrepreneurs would easily be able to reject a business idea and move on to the next without any of them necessarily feeling any urgency or threat to their livelihoods. But yet again other cases could be imagined where an existing company faces almost certain doom if they were not able to change their business model; e.g. Kodak films and the disruptive innovation of digital photography. In such cases, there would definitely be some urgency to find new solutions but the goals would most likely be very unclear.

Back to the idea of networking and blankness - the scallop case points to pertinent areas of what it means to work in networks. This is part of what this researcher considers *networking* to mean. It takes a lot of effort to get actors together even when the actors share the same fundamental idea, which is another way of saying, and this is repeating a message from the above sections, those projects that form new solutions that last, are also defined by the relations of actors. It could be imagined that the case of saving scallops was a process where the objective of saving the scallops superseded any emotions related to the actors not being familiar with one another. In other words, the fishermen, scientists etc. might not be familiar with one another, speak the same language, but the sense of urgency overcame these gaps. For this thesis, attempts will be made to address the actors in relation to these elements of especially *meaning* and *time*. How do they invest the time needed to enrol actors, to translate meaning etc.? This is in other words the meaning behind one of the research questions of this thesis.

Blankness then is a term with a value added to it. By 'being blank' an actor has the potential to draw in other actors, which is a good thing, so to speak. When dealing with commercial interests in the context of uncertainty this thesis goes beyond that of Callon in that a cause and 'common point of passage' are not always, if ever, clear. In the context of uncertainty processes of exploration in the early stages of creating solutions, are entrepreneurial and opportunistic, and are therefore for not clearly defined. As such, the process of enrolling other actors will be relatively more experimentative than a situation where a crisis is well-defined (e.g. the extinction of scallops). So, for this thesis the role of blankness is related to the processes of enrolling actors and the nature of *experimenting with relations* as a process of finding the correct constellation of actors (human and non-human) for a solution to emerge.

Blankness is also interesting in terms of the ability to maintain a network of relations, as mentioned before. Where the quasi-object *allows* for the contribution of other actors, the relations of actors becomes more viable (as with the neo natal department of a hospital needs babies, nurses, doctors and other actors that all can inscribe the baby *with meaning*).

Conversely it could be argued that a quasi-object's *lack* of blankness could then mean a poorer chance of enrolling actors that would contribute in other ways than was envisioned (a very crude example could be the following: if a man is about to paint his car, and he states very clearly that he wants it to be red, then the other man with a tin of blue paint does not *inscribe attributes to the actor* – there is no room for him. The owner of the car, and indeed the car, become not-blank in terms of choosing a colour for the car. The process of

enrolment then is a process of attracting the exact right actor who as the exact right colour red available. And if no such actor exists, the car will not be painted red).

When dealing with uncertainty the ideal, it seems, would be for actors to openly allow others to inscribe meaning and allow for different inscriptions of attributes, which then can be experimented with, and which then could lead to the alleviation of uncertainty.

(as a note of reflection, and as inspiration for other researchers: the ability of networks to persist, according to literature, the quasi object should be blank, as actors would need to be able to see themselves in the object. The network of access2innovation might benefit from being viewed specifically from this perspective, as there seems to be challenges in maintaining the network relations over time between companies and NGOs).

Blankness and enrolment - in summary:
Blankness and enrolment in the context of this study are interesting to observe:

- Where processes of creating solutions in the context of uncertainty start with processes of Exploration, the actors that *allow* other actors to join (blankness) should stand a better chance of attracting pertinent external actors.
- The *processes* of enrolment include activities of seeking out actors, but the particular subject of blankness is not particularly a process issue. Processes of enrolment include actors that are blank or are not blank.
- If the quasi-objects of the cases studied here offer blankness to external actors, then the activities that follow should reveal actors that add and subtract actors over time.
- If the quasi-object of the cases studied here are not blank, then the processes of enrolment should reflect this.

The particular process of creating solutions can be discussed with a different terminology: *validation,* at this linked to blankness, as any company looking to validate, e.g. a product, would have to be able to enrol, e.g. potential customers, experts or other, whereby processes of validation can take place. The thesis does not attempt to study 'the process of blankness' but to see if the 'processes of enrolment' are performed with actors that are blank, or not.

4.2.8 Validation

The reason for bringing this forward now, is that processes of validation is drawn from contemporary managerial literature and is thought to provide the reader with a more practical sense of why enrolment of actors is important. And by bringing it here, it can help sculpt an understanding of why the other theoretical perspectives are considered in this thesis.

The relevancy of validation is emphasised in new studies of innovation and business development as design studies (Martin 2009, Brown 2009 and others) and entrepreneurial studies (Ries 2011, Blank 2013 and others) in order to understand how to develop business solutions in emergent markets. It is a way to affirm if an idea or concept may be adopted by e.g. customers and other stakeholders is to actually try and put it to the test, and thereby *validating* the idea or concept *before* any attempt at implementing the idea.

In other words – the activity of validation is directly linked to a *business model* (Osterwalder et al 2010) process, and therefore it is interesting to learn of actors validate or not. And as the business model agenda is very fashionable at the time of the research for this thesis, the vocabulary herein might resonate with readers of the thesis.

Eric Ries 2011 in his work "Lean Start-up", which is not specifically focused on Sub Saharan Africa, has created a similar concept. The author suggests that entrepreneurs fail because they are too late in validating their ideas, and spend too much time and resources chasing imagined ideas. Ries' idea is to adopt a type of scientific management perspective where entrepreneurs utilise the tools of rigorously collecting data from experiments with customers to learn quickly what will work and what will not – and to do so repeatedly through-out the product development processes. Thus, as interpreted for this thesis, validation is an externalised process of seeking approval (or other) of the idea, product or service that one wishes to deliver. And in order to seek external input one must enrol actors to do so, hence the relevance for this thesis.

Research also suggests that commercial endeavours in areas such as Sub Saharan Africa should adhere to a paradigm of doing business as something to do with creating *business models* rather than focusing of creating and selling products and services (Prahalad 2002, London and Hart 2004, Kandachar 2008). This discussion is also linked to uncertainty in a specific sense, in that actors that seek to create solutions must at some point gain knowledge about the business, product and/or services and whether they are suitable – a process of validation with e.g. customers or partners. Validation

then, again, is an understanding that whatever will become a solution must be externally validated, *before it is implemented or produced*.

Uncovering what the customers actually want, before building it, then is to gain knowledge. And to do that, the processes of validating a product/idea/service externally are important to understand.

However, for this thesis only the overall idea of validation is taken into consideration, and *not* the greater details of *how* validation takes place (in other words, the process of validation is not a focus point, only if *a* process of validation takes place or not).

The objective then is to sensitise the data collected for this thesis by observing the role of validation, and if this particular activity has any revealing impact on the actors.

The idea of validation emerged for this thesis as unifying concept that seems to connect many of the activities thought to be important in access2innovation – and this is the only reason it has been granted a place in the thesis. And also, the idea of validation is not something that truly was in full awareness of the author of this thesis during data collection. It only occurred when revisiting the data, but with the Lean Start-Up (Ries 2011) in fresh memory. So, extant literature did not directly form an argument for how this perspective of specifically validation is relevant, but the other trending perspectives of Business models, collaboration etc. are unified by the processes of validation, thus it is used here.

How the term **Validation** became part of this thesis?

It is not the most important question to answer, but it is still quite telling of the research process behind this thesis.

During action research consultant work with one particular entrepreneur (studied later – section 6.1), this researcher was continually failing to help this entrepreneur with the access2innovation tools normally used to help companies. In other words, this researcher was wondering why the entrepreneur always seemed to reject any of the tools given to him.

The Eric Ries book "Lean Start-Up" came to this researcher's awareness during open discussions with other researchers, and the ideas shown in this book somehow "made sense" to this researcher.

After studying the ideas of Business Model approaches quite intensively the first two years, failing to convey the ideas of this approach to the particular entrepreneur and then finding this Lean Start-Up book that actually speaks of the same basic idea of involving actors during the process of creating a solution – but in another way – was a revelation.

This researcher tried to convince the entrepreneur (section 6.1.) to have a look at the concept of Lean Start-Up and see if any of that made sense to the entrepreneur.

As the case material will reveal again later, the entrepreneur somehow found it interesting and chose to work with it. And because this way of thinking (Lean Start-Up) took up quite a big part of the weeks surrounding this case in time, the researcher has grown to see the connectedness to Business Model, Uncertainty and working with others in a new way. In other words, Lean Start-Up in a unifying way, says what access2innovation, business model literature, innovation and ideas of collaboration say in many other ways.

Validation can be discussed in another was as it is also linked to *innovation*. To come up with ideas, concepts or even inventions, a process of validation and market adoption would then prove the idea, concept or invention's innovation (Ries 2011).

An idea of the process of taking an invention and marketing the invention in quite different field of study: biotechnology, gives an idea of the processes actors go through.

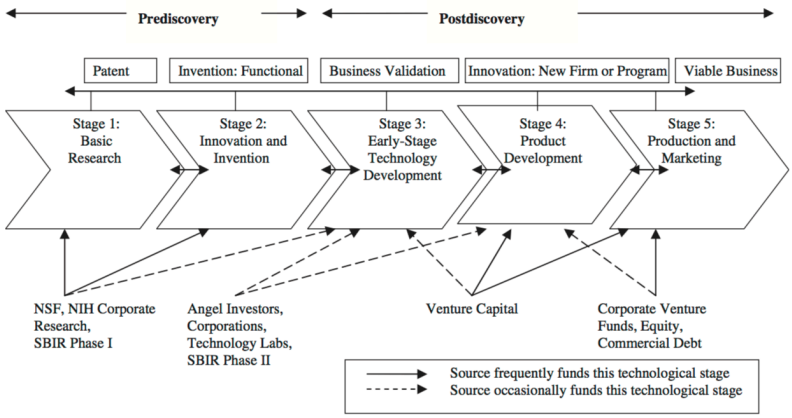


Figure 13: An example of the processes from invention to innovation
Source: Khilji et al 2006

In effect, the viability of an invention includes processes of validation (Stage 3 in this model particular model).

In a conference paper (Butler and Christensen, 2013) this researcher and co-author David Christensen argued the process of validation in yet another perspective, where findings were presented under the topic: *Disruptive Co-Creation? Some Experiences in Fostering Innovative and Sustainable Business Models for Emerging Markets* (Sustainable Innovation Conference, Epsom, UK, 2013). The article, and indeed also for this thesis, focuses on the requirement of co-creation when creating solutions in emerging markets, which is the adopted model of access2innovation. In other words, to create new solutions is a matter of co-creation, which includes having partnerships and network relations.

The proposed recurring stages of innovation in the facilitated activities is adopted from a model of enterprise development, by Koh et al 2012. Their model is visualised as such:

Figure 14: Four stages of pioneer firm development
Source: Koh et al (2012)

Blueprinting in the perspective of Koh et al (and indeed also for access2innovation) is this:

"First of all, pioneers need to blueprint their designs for the future business [...] This stage involves connecting the capability for business and often technical innovation to address the needs of customers or suppliers [...]" (Koh et al 2012, p. 11)

Validation is defined as follows:

"However, having a product that works is not enough. In the second stage, pioneers need to validate the commercial viability and scalability of the business model described in the blueprint. This involves running market trials in which business plan assumptions are tested [...] Market trials often reveal issues and weaknesses in the blueprint, leading to refinements in the product, technology and business model, and further trials. The greater the degree of model innovation involved, the more time and resources need to be invested in this stage." (Koh et al 2012, p. 11)

Then the two first stages are fundamentally envisioning how a solution could look like and then testing it in the market. The following stages of preparation and scale are purely the role of companies, and not stages privy to this study as in access2innovation and indeed other Danish government funded initiatives like it, the facilitation does not go beyond the point of implementation[24].

[24] A legislative restrictive act, as the Danish Government cannot support companies as they implement businesses, only support them up to the point where the market decides if the company will make it or not.

STAGE	1. Blueprint	2. Validate
	Developing the blueprint for the future business	*Testing and refining the business model*
KEY ACTIVITIES	• Understand customer needs • Develop initial customer proposition • Develop business plan • Develop core technologies and/or product prototypes	• Conduct market trials • Test business model assumptions • Refine business model, technologies and/or product as required
KEY NEEDS	• Innovation capability • Strategy development and business planning • Talent networks • Seed funding	• Operationalizing the model • Focus on cost, value and pricing • Learning orientation and flexibility • Innovation capability • Funds to facilitate market trials and refinement
END MILESTONES	• Compelling initial business plan • Demonstrated core technologies and/or product prototype	• Refined business model, technologies, product • Validation of viability and scalability • Indication of customer demand

Figure 15: Four Stages of the Pioneer Firm's Journey
(the two later stages of Prepare and Scale are removed for this thesis)
Source: Koh et al (2012)

Note: Extant literature, as has been mentioned repeatedly so far, shows that Business Model approaches to business, funding, learning etc. are important elements in finding a path to do business in e.g. Sub Saharan Africa (see the model above which contains many these). What extant literature does not show is the processes and interrelatedness of actors over time, which is part of the purpose of this thesis.

The figure above is a dissection of the four-phase model, keeping with the first two as pertinent for this thesis. The main, as interpreted here, messages to take away from this list of activities (important processes), key needs (important actors) and milestones, are:

- To start out with an idea or plan
- To perform activities that allows one to learn
- To adopt the business model as learning increases.

However, an addition to the model is needed in the access2innovation model of facilitation.

In access2innovation activities there is an earlier stage than Blueprinting: ***Exploration***.

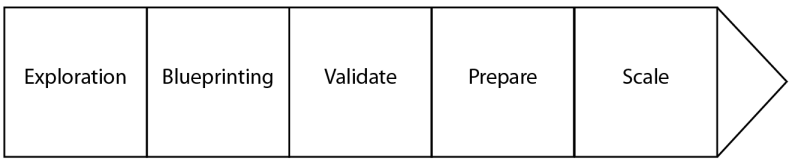


Figure 16: Five Phases of creating solutions
Source: The author's own work - adaptation of model by Koh et al (2012)

Exploration is here understood as the initiating processes of discovering opportunities as well as potential collaborative partners. The stage before there is an actual idea to work with. These processes are what in access2innovation include surveying NGOs, forging partnerships, recruiting businesses, making trips to East Africa with the businesses and trying to entice a sense of interest by the attending companies. In other words, the different perspective of access2innovation of the likes of Koh et al, and indeed also Wharton Business School, is the act of enrolling actors in early stages of exploration. However, for this thesis the focus is directed at the processes of validation.

The same understanding of validation is also made by the aforementioned Wharton Business School approach to emerging markets by facilitating businesses processes, albeit with a different framing. The Wharton approach is to perform processes of Validation *for* the companies looking to emerging markets (Thompson and Macmillan 2010). These include surveying crucial parts of the business model, investigating legal aspects etc. The crux of the matter though, is that Wharton perform this task *for* the companies, as they suggest that companies are not equipped to perform these tasks. Where in access2innovation there is an attempt to build or support these competencies in the businesses attending the access2innovation projects. In other words, the attempt is to show that companies can be facilitated as part of partnerships to perform, amongst other things, processes of validation. In fact, it is a cornerstone of access2innovation that this process of validation takes place, as it is thought to be crucial for any company looking to emerging markets.

Thus, for this thesis, it is interesting to learn how companies perform processes of validation, as indeed are the other processes.

Validation ostensibly has correlations with particularly the second research question for this thesis; i.e. the processes of enrolment. And by adding the concerns of enrolment this thesis expands the scope of validation as presented by Koh et al (2012). In order to validate an idea or concept, one must have relations from which to validate it, which is not only 'the market' (see insert in the introduction of this thesis), but other interested actors including partners and other relations.

So, understanding what companies do in the context of uncertainty, is then also to learn about the processes of validation, and part of understanding this must consider the processes of enrolment.

Enrolment in other words, is a requirement of validation, validation is not a requirement of enrolment. Enrolment then becomes the more powerful process of the two, it would seem, but for the research process validation is at least a relatively identifiable event to observe. And by observing if the actors validate or not, can provide knowledge about the processes of enrolment.

As a reminder to the reader: the research sub-questions presented for this thesis (process of sense making and enrolment) are defined as separate research paths, but in reality, they are intertwined.

4.2.9 Routines and Verbification

The thoughts of March are comprehensive and draw on many perspectives, but of those that are informative for this research are linked more specifically to relations with the outside world, as seen from the point of the organisation.

March and his colleagues (Cohen et al 1972) discuss organisations that are not *things* or clearly demarcated entities, but as something that is *becoming*. He considers organisations as *loosely coupled systems* in the same sense as Weick. Systems, as understood, or rather implied by March, can be any actor or groups of actors with a certain stabilised perception of self (the idea of *groups* however is not the same as Latour, as Latour thinks that groups too are *becoming*, they *are* not). But systems are not linked a priori according to March. Or put differently, just because there is a rationale of an organisation and the elements that define the organisation, the different systems do not come together by decision or design in particular ways. The actions performed by actors in these systems deal with many principles at a time and are not in the sense organised. March essentially purports the idea of *incoherence in coherence* (March 1994). Organisations exist not to become coherent, but are thought to be coherent, but need to be incoherent in order to deal with the incoherent world. Simplifying this idea, one could consider it a matter not too distant from the idea of blankness (see above). An actor who hopes to enrol other actors must exhume blankness so that others may inscribe attributes to him, as well as an actor that is *able* to appear to be less fixed or coherent can allow for some sort of flexibility or blankness. But at the same time order must be developed over space and time, thus providing stability and sustainability, as this is fundamentally what organisations hope to do (March 1991). But the processes of becoming sustainable, as this researcher reads into March, is a long continuation of connected events with only temporal stability. March does not intend to study organisations as they change or explain change. He wants to understand how processes can *stabilise*, and one term he uses in relation to this is *routine*.

Routines help the coordination of many activities at the same time and can e.g. mitigate conflicts. In particular March believes that routines can provide codes of *meaning*. This perspective is worth discussing, especially as routines, as mentioned earlier, *are characteristics for actors who seem not to be able to deal with uncertainty*!

To establish that *routines come before meaning* is at best questionable. Would a company for instance not attempt to enrol actors, such as new employees, by attempting to match a sense of meaning, and only when succeeding in attracting the new employees then provide the new employees with a paradigm or set of routines that management thinks best suited to fulfil this

meaning? Or maybe March indicates it the other way around, *conveying* the meaning of the activities in the organisation by the routines the organisation employs, as an instrument to communicate not only *what* the organisation does, but also *why*? It might make more sense to for this researcher when coupled with the earlier discussion, that organisations are always becoming, as such the *enrolment* of actors (adding) would be continuous as would the *leaving* (subtracting) of actors (e.g. workers that are fired or find job elsewhere), and thereby also those people who uphold the routines and therefor meaning. This may be relevant when analysing the data for this thesis, i.e. the idea of meaning of groups is related to those who inhabit the groups and their routines, as well as the coming and going of members, which then must influence the perception of what is indeed routines.

March is, to this researcher, in some ways incoherent and seems to falter in terms of the fundamental assumptions that guide his theorisations. If March deliberately adhered to a common belief of commercial businesses; e.g. organisations are thought always to pursue *effectiveness* or *growth*, then it makes more sense. But not all organisations do. The movement of an organisation over time in this researcher's interpretation of March, seems to subliminally linger on some basic but assumed fact about business – e.g. that they all want the same thing. But in recent years, discussions and research into commercial organisations that seek alternative goals have emerged, e.g. social businesses[25] ,

A useful consideration for this thesis when considering March is that he does not consider organisations as something that can be broken down into *units of analysis*. Whatever an organisation happens to do cannot be understood as happening especially in one department, management level or other, but as a multi-facetted understanding of the coming together of many actors and actions. This informs for this researcher that when studying business processes, one must beware of not attempting to compartmentalise actors in order to study them (like black-boxing). Unfortunately, this perspective is diametrically opposite of the standpoints of this researcher and this thesis: the idea of conducting an embedded case study (please see section 5.1). In other words, March would criticise this researcher for conducting a study of embedded units for the sake of saying something about a larger or more abstract entity. This in turn compounds the discussions of what case studies and process studies are able to do, and fundamentally juxta positioning one case study method across from some other case study method (see next chapter).

[25] e.g. Nobel Laureate Professor Muhammad Yunus, Creating a world without poverty, 2009, PublicAffairs

Fortunately, most of the actors in this thesis are very small in size and have very little organisations to consider, but prior to conducting studies a sentiment shared by access2innovation staff is that the small organisations in the program are all new, and that 'the cupboard is empty' (the businesses need all manner of things, contacts, devices, tools etc. to do business) the actors might be really busy networkers and have a lot more network activities than anyone would be able to trace. Also, there is also the possibility of a latent bounded rationality and dominant logic of entrepreneurs that stems from past experiences, which may have vast implications for the processes of the new company, which in turn might highlight or even hide them as routines, but which a researcher will have difficulty in seeing or understanding as these have not been witnessed. For the analyses however, the researcher should then attempt to describe the cases here not only for what they are doing now, but what has happened before. Or to synthesise the theoretical discussions, so far, to a point, to *learn* if there are actants carried over from past activities, even if they are not immediately applicable to the context of this study.

Another aspect of March useful for this thesis and with connotations to routines, is *stabilisation*. Stabilisation intuitively makes sense in that actors investing time and resources would hope to reach a point of buoyancy where time and resources are not required as much as in the early phases of the venture. An entrepreneur is especially interested in reaching a level of stability where *uncertainty* about the survivability of the business is alleviated, risk better understood from which the entrepreneur can then enrol other actors such as specialist workers or maybe investors. This perspective has direct linkages to one of the research questions of this thesis; i.e. enrolment.

Stabilisation and routines go hand in hand in essence, and speak of the same fundamental understanding of what actors hope to achieve in the *early stages* of business development. Maybe there are conflicts of interests to be observed in the cases where actors who seek opportunities in the context of uncertainty, where the business requires yet more innovation through experimentation, but where the actor continually tries to stabilise and routinize. And within these processes the ability to enrol others to the cause may be influenced by the stabilisation and routinizing efforts, or lack thereof. These distinctions would be interesting to observe. For example; if the actor is struggling to finance activities then attracting investors might be most important thus forcing a noun based approach of budgets and plans (nouns, verbs and verbification are subjects of the following sections), where an actor who has been able to replenish funding might not have the same need to stick to stabilising activities.

4.2.10 Sense making in business

Weick is arguably a significant contributor to organisation theory discussions and his approach to organising and sense making is of important value for this thesis. His work and this researcher's subsequent conceptualisation used in the analyses here will be formed by integrating the different views of the different theorists discussed so far, but Weick in particular comes very close to the purpose of the thesis itself.

"Organizational sense making is first and foremost about the question: How does something come to be an event for organizational members? Second, sense making is about the question: What does an event mean? In the context of everyday life, when people confront something unintelligible and ask "what's the story here?" their question has the force of bringing an event into existence. When people then ask "now what should I do?" this added question has the force of bringing meaning into existence, meaning that they hope is stable enough for them to act into the future, continue to act, and to have the sense that they remain in touch with the continuing flow of experience." (Weick et al 2005, p. 410)

Weick does not distinguish organisational sense making from other sorts of sense making and other sorts of organising. Sense making and organising are mutually dependent. There cannot be one without the other. The process of actors is a *meshing of actors, interests and activities* as these are intertwined and cannot immediately be separated or entified into observable components for comparison. To study actors as they make sense is to understand the relationships between actors their interests and subsequent activities.

Weick too does not believe that a demarcated entity 'organisation' exists, but a group of actors might organise; i.e. the *verb* is more relevant than the *noun*. And in *verbifying*, Weick essentially underlines the importance of understanding the dynamism of actors in groups, or the processes of organising. Weick links the idea of organising very strongly with sense making as he believes that actors try to make sense of their conditions through actions, which Weick calls 'enactment' (Weick et al 2005). He distinctively does not believe that sense making is a process of interpreting something that is out-there, much as also Latour laments. To make sense is essentially to act. When Weick was confronted by Hammer and Høpner (2014) where they wished to learn why Weick used the same terms differently over time, and also used cases as examples but making different conclusions every time the cases was used, Weick said that he had learned many things from the last time he worked with a case, letting him see the case in new light.

This, to this researcher, is extremely important for:
a. the thesis,
b. facilitation programs such as access2innovation and
c. social science in general, as it is without final conclusions as actors will continue to add on, experience and make sense differently over time.

Making sense in organisation and business then is to understand that what is known today may not be relevant tomorrow. But also materials may lose their meanings, as even new technologies are social constructions, as the proliferation of a new technology would require a business to be *created*. A technology needs an organised effort for it to be disseminated, and when a technology is put into the hands of actors they too make sense of it in their own way (validation of sorts), and essentially changes its perceived properties. Nothing can really be expected to come out as it was designed to. Artefacts may change their meaning over time, e.g. a scientific article read three years ago, and re-read today will offer sense making in some other way simply because experience, experiments etc. have yielded new views.

Thus, the process of making sense is a mix of:
a. Deductions of information and
b. Inductions from interactions with actors
(Möller 2010, p. 364-365).

Möller suggests that there is an interchangeable perception of when something makes sense (reasoning), and what makes sense then is substantiated differently over time.

By these activities of reasoning actors enact according to how it makes sense.

According to Weick enactment must be understood *"…at the level of intersubjective interaction between individuals"* (Hernes 2008, p. 115). This again expresses a significance of the individual and not only the group or system comprised of individuals. Literature on Innovation process discusses this quite strongly, where the idea of *traits* versus *effectuation* divide researchers (see for example Karri and Goel 2008 as a "Response to Sarasvathy and Dew"). Traits refers to understanding innovation as a matter of the people involved in the innovation process and their abilities (traits), where effectuation proponents suggest that discussions should rather study the activities of actors and how they effectuate. For this thesis, there is no deliberate segregation of studies as either being one or the other. However, the focus is to study *activities* and from these try to come up with a sensitised analysis of *why* these activities happen, which *might* lead to a discussion of traits of the actors. In methodological terms this researcher also *makes sense*

of events by deduction of information and induction from interaction with actors.

About the process of creating networks, which is particularly interesting for the access2innovation program, Weick is interested in the analysis of *individuals* and their relations. Also, the different theorists drawn up in this overall theory chapter all fundamentally understand that individuals play significant roles in organisations, and that the coming together of individuals in groups creates interesting dynamics.

When considering *sense making in light of uncertainty*, continuous change etc. where there is no obvious ordering or structuring; e.g. the type of context of this study, an actor cannot rely on standardisations or reproduction of a skill, as Weick believes *improvisation* is essential.

Improvisation is linked to enactment, but also linked to something important for this thesis – *innovation*. In fact, as will be elaborated, there seems to be significant links between sense making, individuals dealing with uncertainty and innovative capabilities, which the analyses later may shed light some.

Sense making is an actor's *ability to perceive, interpret and construct meaning of an emergence* (Weick 1995). The *meaning construction* is the more observable part of what an actor does, from a researcher's perspective. It is the *enactment* that informs the researcher of the actor and the actor's perceptions and the actor's sense making. *Language* then becomes extremely important for at least two reasons: if others are to be linked to the actor who is enacting his ideas of what makes sense to him others must be able to interpret what he communicates through his enactment (Weick et al 2005), and from a researcher's perspective the challenge is similar; i.e. that the researcher must be aware of the language of the actor and try to also make sense of it in order to study him.

It is through language that actors enact with others and language will be limited by the actors' views and experiences. Thinking again of uncertainty and how the actors deal with it, it now becomes clearer that, in terms of language, *verbs* allows for more movement as is needed as uncertainty is alleviated, and as is interpreted here, allows for better enrolment of other actors.

By using verbs there is an opportunity to *show direction*, or to paraphrase Callon and the subject of having a common point of passage. Examples: 'we have an organisation' is to state a fact by use of a noun, but converting the noun into a verb 'to organise in order to…' is to show direction, and subsequently to allow for better enrolment. But do the actors studied for this

thesis portray this sort of behaviour? Could the ability to communicate signify their capability in enrolling others, and could this inform discussions of why a network of actors from different sectors, such as it has been experienced in access2innovation, do not persist, and for that matter why actors are still not understood as they actor in ways not expected of them?

The verb allows certain *blankness* as mentioned earlier, it allows others to inscribe attributes to the actor, and therefore it increases the potential for enrolment. And enrolment is important when working in networks (as stated earlier repeatedly already). So, processes are best understood as belonging primarily to a world of verbs, but Weick recognises that there are indeed nouns, which cannot simply be transformed to verbs. Nouns that offer stability of meaning, e.g. technical artefacts. What these *nouns* are in the cases will be interesting to see, and if the actors treat them as nouns, and ostensibly what else they treat as *verbs*.

The processes of enactment especially in terms of sense making between people are a matter of *time and space*. In terms of time; actions and decisions may *influence* what comes next, but not *determine* what comes next. Of all the results of a disaster caused by a human failure, it cannot be expected that the last decision made just before the disaster happened, was the reason for the disaster (which is a discussion closely resembling that of the "in-here out-there" discussion earlier). There must be a long line of events and decisions, as well as interactions of actors through time and space that led to the disaster.

Essentially processes cannot be understood by causal connections.

Weick often uses the example of a nurse tending to neo-natal baby over the course of many days and weeks. In the eyes of the nurse the baby changed its condition dramatically for the worse, in the course of two hours, which she believed needed immediate attention. She then tried to enrol others, especially doctors to convince them to perform tests etc. But everyone else surrounding the nurse who had not been in contact with the baby over the days and weeks had not sensed the same urgency of the condition as the particular nurse. There were a million different things that could have contributed to the nurse evaluation of the situation with the baby, and not a singular event or a singular cause. By being together with the baby she learned to see the particular needs of that particular baby, to understand the natural ebbs and flows of that baby, and when something goes terribly different than what she had previously experienced then she raises the alarm. But not everyone else might understand or make sense of it. To *understand* the baby, the nurse (researcher if you like) must spend time with the baby to get an idea of what this particular baby is all about, especially as in this

instance the baby is not able to speak. When an emergency happens, the emergency might not fall into a specific well-known category where routines, such as medicines and prescriptions, can solve the problem. The problem might be new.

When studying actors in a process perspective, the ideal then is to come to know the individual actor over time, from which then it only makes sense what the actor is about – particularly as the actor is expected to enter into the unknown. So too the actors would be able to make sense of the solutions they are attempting to create only over time, because only then do they know if the solution makes sense.

So how does this influence the enrolment of others? How to make enough sense so that others are able to join in and act? Which leads this researcher to Weick's use of the term *space*, and his interest in individuals as they are part of groups of people.

In terms of space, Weick addresses the importance of individuals. Well, his interest is not the individuals themselves but their *behaviours*. And especially behaviours of individuals in groups as these will tend to break with rule-defined formal organisations. Weick exemplifies this by an example of firemen working in urgent conditions, and how their trust and own-developed cues from the intuitive processes that help them overcome urgencies, and sometimes they can only do so by sidestepping the rules formed by the organisation (e.g. dropping tools, even when told to never do so). The nurse would in a group who work continually together probably stand a better chance for a new action to take place with the child that seemed to get sick.

For this thesis, this is extremely important. If an opportunity arises which requires input or work from more than one actor, enrolment should be swift and effective. If one stands alone and has had no time forging relations with others, then enrolment process can be difficult. So, do the business actors studied here, spend time reaching out to others to let them know, continually, what it is they are doing, so when the time comes to come together and create solutions together, then actors simply join in? Essentially, do the actors studied here, network with others and allow others to make sense of what is going on so they can come to assistance if needed?

There seems to be an important issue here for this research to consider for the analysis. If an actor in relative terms is 'alone' and experiences a situation that demands swift action, the process of enrolling others will reflect that, but an actor that has a vast network of fertilised or maintained relations might

stand a better chance of dealing with the situation as the enrolment of others has started *before* any crisis has emerged?!

Weick believes that enactment of people is done through communication and language, including cues, hints and other forms of communication, and that the use of verbs defines the processes. But there are also nouns used in processes, more particularly *routines* (as mentioned when discussing March above, and in another perspective related to uncertainty much earlier in this thesis). Actors will choose to act based either on a progressive and dynamic decision making process (this researcher's choice of words, not Weick's) or one based on routines, which are also linked to other nouns which are embedded in structure; e.g. budgets, plans, roles, strategies. Thus, Weick claims that organising exists between the person-to-person actions and the structural level. This belief has connotations to that of Ciborra (2002) who, as mentioned elsewhere, explains the term bricolage; essentially that actors tend to assemble their solutions through actors and artefacts that are readily available, and not from what would be ideal in a theoretical manner of speaking.

Fundamental to Weick however is that different times infer different types of processes. In times of stability the use of nouns; i.e. routines, budgets, plans, are utilised, and in times of unrest or *uncertainty* verbs better define (or from the outside *should* be observed) the actions.

Weick has also forwarded a list of seven attributes of sense making, which he believes are relevant in all processes of organising:

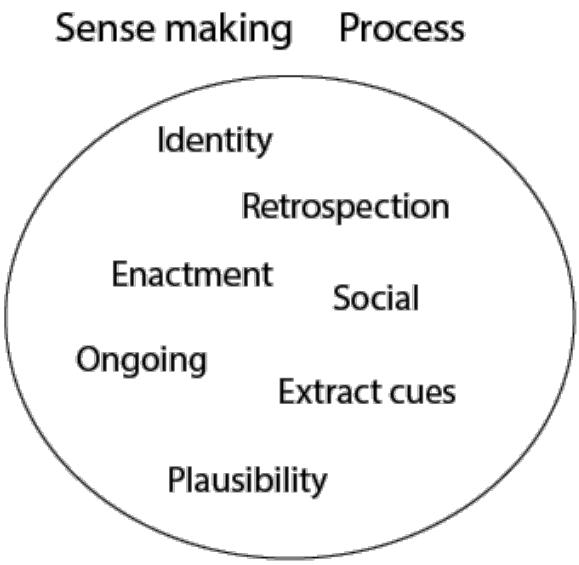


Figure 17: Sense making
Source: Weick (1995)

These are essentially an attempt at elaborating that, which has been already said, in that sense making is a process where actors form identities and also *identify* others by some means and labels, and in forming new actions there is also processes of *retrospection* followed by *enactment*. And this enactment happens in *social* life; i.e. the actions are dependent upon the actors that are part of the actions. And sense making is *on-going* as there are no clearly demarcated lines of a time line of when something starts and another thing stops as it is all a matter of assessing *plausibility* as this is essentially what drives decisions and assessments of what to do next. And part of this is also to extract *cues* from others to help form a more substantial understanding, sense making, of what is going on, and therefore may inform the actor of what to do next.

These seven theorems are an attempt at lifting, or lowering, the theory of sense making into management theory, and as this has no real usage for this thesis, as the purpose here is to study actors so that they might make sense of

what *they are* doing; this researcher does *not* utilise theories of sense making *to make the actors better*. The researcher utilises sense making as a means to understand, sensitise and communicate the data and findings.

To study processes, for this thesis, where actors are situated in a condition of uncertainty, the researcher *should expect* to find actors enduring processes much defined by verbs, more than nouns. Actors *should* attribute meaning to the processes they are in, in light of uncertainty. The processes of the businesses investigated here *should* deal with uncertainty by acting in accordance with *not* leaning entirely on routines. This might seem like fumbling with words, so here is another way of expressing the intention: The researcher here *expects* to find actors dealing with uncertainty, who do *not* affix their decision making only based on structure or nouns like budgets etc. Actors "should" be considered to deal with their uncertainties with more dynamism and innovativeness. So too is it expected that actors network (or work net) to establish a broad base of contacts to draw upon *before* problems emerge (as opposed to seeking out relations *after* the problem has emerged).

Re-cap: to study the processes of how actors make sense of their relations and activities etc., which can lead to a better understanding of what it is they do when creating solutions in networks, is then to study actors in action, enacting how they make sense of things, and to identify the communication and cues used to enrol others. And the actions that lead the actor to alleviate uncertainty would most probably be those actions that are verbified; i.e. experimenting, testing, asking etc. – processes of validation.

However, there have been critiques of the sense making theory of Weick. Some of the critique finds faults in that Weick seems to: *"…suggest the presence of a framing that confines sense to being practically desirable, cognitively expressed and largely retrospectively organized (sense is recovered)*" (Holt and Cornelissen 2013, p. 2). This critique argues that making sense must be understood with a much wider understanding beyond that of organisations that have formed a direction of where to go, by cognitively assessing a situation. And also there is the problem of investigating sense making in light of particularly *crisis*. A crisis will indeed lend a, for an outsider, clearer view of what was before and what is now, from which a new process of sense making has occurred. Returning to Latour, the idea that something is a thing in one point in time, and then another in another point in time, and that "something" happened in the interceding point in time, does not really tell the whole story. Holt and Cornelissen also suggest that sense making is not just a cognitive, directional, practical application, but includes moods and non-instrumental engagement. Sense making then is also other things than those that are enacted, e.g. pondering something without enactment is also to attempt to make sense of things, and subdividing actions

based on a crisis into directional points of action is at least to dismiss something that might not be so easily dismissible. Holt and Cornelissen take up the Mann Gulch case used often by Weick, where fire-fighters airdrop into a vast forest fire with a certain "mind-set" and when conditions changed (a crisis of being run down by a fire spreading much faster than they could outrun), some stayed in their previous mind-set many of which died, where some did not and survived. Interpreting the Mann Gulch case and in fact also of Holt and Cornelissen's use of the case to criticise Weick, they eloquently focus on the two factions: those that are able to make a *new* sense of the situation (improvisation), and those that did not, but they tend to only say something about that *there are differences in how people* make sense of things (the activities and effectuation). But why is that someone is *able* to improvise and others not (traits)? Of course, that might not be the purpose of sense making theory to discuss the *skill* of improvisation, but this researcher cannot help but to think that the traits of actors must have some influence or the potential activities of these actors.

Others criticise Weick's sense making theory as lacking a cognitive-cultural aspect of institutions: *"Moving beyond the theorization of institutions as taken-for-granted cognitive constraints, we advance an enlarged framework of cognitive-cultural institutions as a context that also primes, edits and triggers sense making"* (Weber and Glynn 2006, p. 1655). This line of thinking is in some sense also that of Latour in that he too addresses the problem of entifying actors and situations with simple causality. To make sense of a situation then must also be understood in the wider institutional consideration offered by culture.

Still others criticise sense making, but do so theoretically, or by use of cases that have not been collected by the same researchers who form the criticism. In other words, there are many things to criticise sense making for, apparently, but data utilised in the criticisms are not rigorous.

In conclusion, the sense making aspect of studying actors in process is important, as it is able to produce a vocabulary that makes it more comprehensible and therefore more capable of sensitising the findings. But rigorously *researching* how other actors make sense, *should* be in great consideration of more factors than are directly observable; such as cultural background, language and training, but for the researcher it will be almost impossible to factor in all of these issues.

What this researcher can do, however, is to allow the studies to be *reflective* and not only a matter of studying actors *as they act*. To be reflective gives the researcher a chance to ask the actors of how they themselves have perceived their experiences – when they have had time to reflect on these experiences.

The challenge with studying actors and how they create solutions in networks through the lens of sense making, is that there are bound to be instances where neither the researcher nor the actor are aware of the instance or event as it happens or directly thereafter, but as Latour says, the researcher should let the data speak and not trouble oneself with that which does not leave a trail.

And also, the researcher must remind himself that the *purpose* of this thesis is *not to generalise* in order to create new theory as such, but to bring in data of what has been observed when actors create solutions. The sense making theory contributes with primarily two things: terms that are sensitive to the explaining of what it is actors do in a process perspective and also cautions of how the researcher considers what makes sense; i.e. if it is the researcher's sense or the actor's or something between the researcher and the actor.

4.2.11 Finding actants

As an interventionist, facilitator and researcher in access2innovation, adhering to an action research paradigm the researcher might introduce ideas that make sense to him, but which might not make sense to other actors. But also, to study business process will theoretically mean to follow business all the time. If for instance, the researcher has been invited to a meeting where the business is going to discuss a topic, and the meeting ends with a decision on what to do next, the researcher cannot simply deduce that the *reasons* for the decisions should all be found by what was said *during* the meeting. The extensive range of influential factors on any decision can be anything from power relations within a company, 'I won the last battle, I will let you win this one', hidden agendas, misinterpretations, new developments, but also domestic problems, health issues, dieting, church problems, turf wars and almost anything you can think of.

Why actors choose to do whatever it is they choose to do, *should not* simply be expected to be the end result of a very demarcated event, or to refer to Weick, actors do not as much make choices and decisions, as they make sense of conditions. The words 'choose' or 'decision' Weick believes do not unveil the processes an actor experiences. To study actors, the researcher should then attempt to look at the sense making behind actions as the 'decision' in itself is only a fraction of the story (Weick et al 2005). So, sense making is to ask: "what's the story?" (Weick et al 2005, p. 410), and the story is also that which goes beyond an event.

The researcher's focus here is not, to focus on specific predefined things within the processes as a gauge, but to widen the understanding to also include remote tiers of influence.

The researcher does not expect the processes that matter the most to be clearly definable in a specific point in time, nor does the researcher expect there to be simple causal linkages (as mentioned repeatedly throughout this thesis). Any influence forcing the hand of an actor can come from practically any tier of society. If legislators, a remote tier of influence of sorts, elect to restrict the movements of a certain industry sector, then that is quite significant, but it is not *processually* significant on a single actor's level as the legislation affects everybody (theoretically) within that sector. But how a particular actor *chooses* to deal with it, or rather makes sense and enacts on it, reveals interesting processes. So, one event might be influential, but the event itself for the researcher is not in itself interesting. Nor is the immediate response to the event interesting, as the researcher is primarily interested in actants, vis-à-vis those actors that stand the test of time. In other words, the researcher hopes to analyse the businesses cases and the processes they go through but trying to find actants, from the perspective of the businesses, but still choose to mention other incidents even though they might not be relevant here and now. The actants is a symbolic reference to actors, activities or even ideas that have proven themselves over time and therefore have some lasting relevance for the actors – good or bad. The researcher will however also try to see if he can make any sense of actors that are persistently *not* there, to see if this can yield any valuable analysis, as the process of innovation, is equally interesting from the perspective of actors that are deliberately thrown out. Maybe to understand the *process of innovation* is to understand something to do with *non-actants* – vis-à-vis to subtract actors over time?

4.3 Framing Theories of Sense Making and Enrolment

The many contributions from literature on matters of studying processes, reveal that it is not an easy task to study actors who act. Before summarising the theoretical contributions, a short discussion of the ontology of it all is merited.

4.3.1 Ontology of the theoretical outline

The following then is an attempt at providing the reader with a more settled and condensed form of explaining what the problems are, which this thesis examines, but mostly how I, the author, view these problems. The view of an author is important to show, as the reader may have a different view, which in turn would make the thesis difficult to grasp, had the author not explicated this view for the reader.

The main concern, which has motivated me, is that despite decades of aid and help administered to developing nations such as those in Sub-Saharan Africa, the sustainable development of these nations has yet to happen. It seems to me that whatever has been done to date has been unable to yield the desired results, thus it could be argued that *alternative approaches* should be explored.

One such alternative approach is to see if the commercial approach of businesses could somehow make a positive impact on development and solutions for complex social problems.

Of all the different concerns of how business may become significant actors in helping form sustainable development, some are looking on creating partnerships between different sectors; research, business, NGOs and government. And one of those initiatives is that of access2innovation where this researcher has worked as a consultant.

Previous practical access2innovation experiences as well as research have shown, that there could be possibilities for different sector actors to work together to form viable solutions. However, there are quite unsettling realisations to deal with:

- *There are no markets* – markets have to be created, so doing e.g. market research in a traditional sense really does not help
- The designed facilitation processes of access2innovation have maybe been able to enrol actors from different sectors, but when all the projects were nearing commercialisation, the original partners were not part of the solution anymore.
- Thus, even with a renewed concept of working together across different sectors, the final solutions bypass most of the actors who were initially involved in shaping these solutions.
- There are clearly things happening that are not fully understood yet.

As such the companies were the only constant at the end of the access2innovation projects, which does put into question the sustainability of

cooperation across sectors in the future. In laymen's terms: why should these other non-commercial actors participate in future projects when clearly, they do not benefit from them?

In reflection of the early experiences of access2innovation it became clear that companies were not really well understood, and maybe therefore the processes of facilitating projects including companies did not work as imagined.

The framing of the original thesis work was based on business models. It has been shown quite strongly in literature (as mentioned repeatedly in this thesis already), that the business model mind-set is more likely to work than a simple transaction based form of doing business. The business model mind-set can include the idea of market creation, in that commercial actors seeking for opportunities will have to create a business model and also the market in order to do so. A business model mind-set for targeting emerging markets (Prahalad 2010 and others) is based on the idea that it is not the product of the company that will make it succeed, but *how* the business is constructed that will make the difference. And through envisioning models of doing business and by then creating the markets, companies are thought to stand a better chance of succeeding.

But the companies of access2innovation did not take to this way of doing business; i.e. they did not seemingly adopt to the tool applied through access2innovation called the Business Model CANVAS (Osterwalder et al 2010). So, the process of studying actors creating business models when partaking in access2innovation projects was not going as well as had been hoped. The companies might have a business model mind-set, but it was not clear or at least difficult to research diligently. Maybe something else is more important to the companies? Or maybe the managerial tools of access2innovation, e.g. the Business Model CANVAS, are unable to reach the companies that are presented with it? To help facilitate partnerships it was apparent that the access2innovation program has placed a role on companies that the companies did not really fulfil, which suggests that the companies were *assumed* to fulfil a role that they did not fulfil.

The reality (ontology) of this thesis is then: it is important to learn and understand these companies, without assuming anything about the how, why, when and with who they do things.

This thesis hopes also to find something in between purely theoretical concepts and discussions, and purely practical discussions. By staying entirely philosophical does not necessarily yield practical results, and staying only on a practical level, which has been the access2innovation approach so

far, might overlook other concerns with better explanatory power, which is in fact what the author of this thesis discovered over half way through the research process.

There is a need to discover what companies actually do without adhering to any preconceived ideas of what does/should take place, and then see if something can be learned from this. In other words – the study is seated more in the middle of a purely philosophical study and a purely practical one.

This is especially appropriate if the reader, as this researcher, estimates that the sustainable development challenge of Sub Saharan Africa should be investigated through the same models or scopes that have not worked before.

The first clear indication that this ontology is valid, is that access2innovation might facilitate partnerships and that it seems to be important, but the processes of administering research and experience of others (such as the business model mind-set) did not take hold. Something else is going on. The problem could well be defined as (Aaltonen 2008, p. 280):

"It is also possible that an inappropriate model might hinder rather than help understanding of the relevant phenomena"

Thus, choosing theories to investigate the phenomenon (access2innovation), should allow, and not to hinder, the process of understanding the phenomenon.

Then why use the terms Uncertainty and the processes of Sense Making and Enrolment for this study?

Uncertainty, as already defined as a condition where everything is unclear – even the institutions that one has come to rely on are unclear – is something else than studying e.g. entrepreneurs doing business in a neighbouring and very similar country. It is really important to recognise the research behind this, because it effectively says: "When nothing is what you think, learning what to do might require you to go beyond the tool box you are familiar with and what you thought you should do!". And as stated through research, to do business in places like Sub-Saharan Africa, is to investigate not the market size or potential and such, but to investigate *everything*.

What can process theory help with?

Process theory includes a vocabulary that discusses e.g. what actors do when dealing with new situations, as has hopefully become apparent in the above. Process theory exemplifies the type of activities more suitable for times of

stability and times of instability, such as can be said of the context of this thesis. Sense making in turn tries to uncover how these events are made sensible to the actors and how these are changed into action.

Trying to discover what actors do in general terms is basically what this thesis is about.

What the ontology of this thesis is *not*, is:

- The access2innovation is universally relevant and all activities should only be understood as part of access2innovation
- All participating actors; NGOS, research, government etc. have an important role to play
- The goal is clear
- Companies can innovate new solutions and they have the capacity to disseminate these solutions.
- Etc.

No, the purpose is to step back and try in a humbler way to discover what actors do in general, and to see if any patterns emerge. And this thesis focuses on the companies, where other researchers might focus on NGOs etc.

However, since a purely inductive participatory observation technique is not within the timeframe nor within resource availability, a few basic (hypothetic-deductive) indicators have been chosen as interesting to observe:

- that actors *enrol* other actors
- that actors try to figure out what works or not. i.e. *experiment with ideas*
- and if the processes reveal behaviours that fit with more defined theories like business models, innovation or other then the analyses will take it from there

And process theories of sense making and enrolment cover these fundamental interests quite well.

And as the research focus is to *understand* actors, the research methodology leans towards dialogue and induction, more than deductions, statistics and testing.

4.3.2 Back to process theory

Studying the *behaviour* of actors is a challenge, as actors will often choose to form activities by enrolling actors that are readily available and not only enrolling actors that are ideal; i.e. *bricolage*, as mentioned earlier (Ciborra

2002). The researcher should not expect to benefit from researching actors by looking for certain other actors through deduction (material or non-material), but should rather attempt to see what's going on without prejudice or preconception – vis-à-vis induction.

Latour laments that social scientists should stop projecting an ideal onto actors:

"You have to grant them back the ability to make up their own theories of what the social is made of. Your task is no longer to impose some order, to limit the range of acceptable entities, to teach actors what they are, or to add some reflexivity to their blind practice." (Latour 2005, p. 11-12)

So, to study process of business the researcher *should* study them without adhering to ideals – the researcher *should* simply let the actors do what the actors do.

To come to terms with the concept of process, invokes many different terms, some of which have already been discussed, such as; *strong and weak view of process, entities, entification, correlation, relation, framing, 'out-there, 'in-here', blankness, intuition, intellect, linearity, fluidity, verbification, 'coming to be', artefacts, 'bracketing', selection, experience, abstraction, journeying*, and others. These terms offer more in terms of language and judgment as methods of understanding, than gauges or metrics of description, for this study (and yes, *understanding* and *description* are methodological terms as well). In other words, to study processes, in particular in relation to uncertainty, is not a matter of *calculating* or describing actions through a certain subset of metrics, but more a matter of gaining a more sensitive *understanding* of how actors make sense.

For instance, the activity of *translations* as mentioned earlier regarding Callon is, to this researcher, a difficult field to research without having some sort of pre-understanding of what should take place or to have some relatively assertive way of defining what takes place or what the goal is. Should this thesis discuss how the actors, as part of the facilitated efforts of access2innovation, be studied in how they translate actors? There are two challenges:

1. If anything is fixed or immovable or unquestionable in the make-up of actors – e.g. scallops may be on the brink of extinction – then *translating* the problem at least becomes *possible*. But what does a researcher do when commercial actors exploring opportunities in Sub Saharan Africa do not know what they are looking for? How does a researcher identify how actors translate in order to enrol other

actors, when that which is translated changes all the time? This researcher may make suggestions about how an actor is translated by another actor, but it is at the very least very difficult indeed. And the difficulty relates to the challenge of *interessement*, as already mentioned, in that enrolling others to a cause requires there to be a cause. But for opportunistic entrepreneurs causes come and go over time. There is little to form interessement around. And from a research perspective it may become difficult to know what it is that needs to be translated.

2. The other challenge with identifying translations in relation to access2innovation is that it is an assumption that the activities of access2innovation influence the partnering actors at all. And there is no actual proof that access2innovation has this sort of impact. The consultants of access2innovation have had indications that the facilitation of access2innovation (Ravn 2012) is important, and this could indeed be processes of translation on behalf of all the participating actors. But this thesis is trying to discover how the commercial actors act – and to suggest that these actors are in anyway influenced by access2innovation is to presuppose something yet to be proven.

Translations do take place and actors enrol other actors, but the opportunistic behaviour of the companies studied add and subtract actors many times over time, thus making it difficult to get a firm grasp on this. This in turn makes it difficult to take a Grounded Theory approach at studying actors trying to create solutions in the context of uncertainty, as will become evident at the end of the thesis: actors do not stick to anything for very long before moving into something else. The concept of *validation* is however linked to the idea of translation and interessement in that validation (see section 4.2.8) is a process of engaging potential customers in the hopes that the customer can guide the company whilst a solution is developed. The company then should enrol customers during development of the solution, propose the solution, listen to the customer and translate these into new solutions. So, again it would be quite difficult to make assertions of the translation itself, but it is possible to register if the engagement with other actors, such as customers, happens at all. So that is what this thesis will attempt to do.

In short: the thesis will not as much try to discover how translations are made between actors – but primarily to see if these translations happen at all. And the one type of translation found important for this thesis, is the process of Validation.

In yet other words: do the actors attempt to validate with others or not?

As has been discussed earlier, the context of doing business in Sub-Saharan Africa one must remember that the processes of sense making are ***not*** investigated in a time of crisis. In other words, the processes investigated here are that of companies exploring opportunities where other actors come and go over time as the companies seek out solutions that could become profitable. I.e., these are processes of creating solutions where *nothing is certain*; even the problems, challenges and solutions are uncertain, there *are no common points of passage* as Callon suggests there should be for interessement to form. The example given by Callon is that of scallops thought to go extinct if actions are not taken. The enrolment of actors happens as a sort of common point of passage – the actors would be able to see that the scallops would become extinct if they did not act. But in business where actors are exploring opportunities there are no beginnings or ends, there is no definite "cause" from which to enrol others. The business cannot point to a certain looming disaster and recommend other actors to join in to "the cause". Exploring commercial opportunities is a profit seeking endeavour and the actors that will eventually become part of the solution are not known beforehand, and the processes of enrolling actors is not linear in any way. If the company goes into e.g. Uganda thinking of selling dairy equipment but later finds out that what they should be focusing on are solar powered coolers, then the enrolment process will include processes of adding and subtracting actors over time.

The point here is essentially this: the commercial opportunities these commercial actors are pursuing are neither critical nor clearly demarcated. The actors might not even know what they are getting into. They are trying to discover something from which to turn a profit. They, in other words, are not in any position to enrol others by clearly showing what needs to be done. There is *no clear point of passage* for others who wish to join in. It is peacetime, no crisis, no emergency – only profit seeking. But profit seeking in a context where not even a product is known, should in theoretical terms mean that actors enrol other actors with very little to go by. There are no dying scallops, no forest fires or dying babies, which are examples of clear points of passages. In business, the activities of exploring opportunities for profit are less obvious.

The reason for highlighting this issue of there not being a crisis, in the cases studied here, is that the researcher has a more difficult task of tying events together. If one of the cases in the study clearly set out to create a certain product, e.g. a small-scale windmill, then the processes of sense making and enrolment would gravitate around the windmill (quasi-object). But the companies studied here, as well as almost every other company in the

access2innovation projects do *not* have this clear point of passage. They *explore* opportunities and try to create solutions along the way, and these solutions do not have to be related in any way.

In terms of understanding processes as verb versus noun-based actors: When creating solutions in the context of uncertainty, commercial actors are subject to a lengthy process that can become costly. According to Kubzansky (2012) commercial actors must expect to be in operation for 5 years to reach a break-even point between revenue and costs. The pressure of actors to deliver results then is in fact a time constraint. The sheer uncertainty of what the company should do, the sheer lack of anything to call stable or certain, makes processes of sense making a challenge. It may seem difficult to comprehend, but the processes of creating solutions in the context of uncertainty are definitely *not* processes of stabilisation and noun-based activities. Actors that have no solution, when going into a project, will have to innovate, and because there is a time and particularly a resource constraint, the actors will be "under the gun" so to speak. Solutions in the context of uncertainty essentially do not exist, they are not "out-there" – they cannot be "discovered". Solutions can only be discovered and created by *experimenting with actors*.

Studying actors as they attempt to create solutions in the context of uncertainty as defined in this thesis, is something that research deals with primarily as a theoretical interest, but this thesis is an attempt to provide data to showcase actual processes of creating solutions. And as uncertainty speaks of conditions where nothing can be ascertained without trials and experiments, the activities of actors then *should* reflect certain behaviours (e.g. trials and experiments). However, there are behaviours that are equally as interesting to observe related to what the actors *do not* do, e.g. if actors do not enrol other actors, do not have processes of validation etc.

And from all of this research may come to learn what actors do when trying to create solutions in the context of uncertainty – in a process perspective.

4.3.3 In summary

Uncertainty is a condition where none of the conditions of creating a business can be assumed. Thus, the processes of alleviating uncertainty should include processes of investigating actors that may be found outside the immediate line of interest. This form of doing business is in some literature coined a *business model approach*, and other versions of the same sort of concept is called a *Lean Start-Up approach*.

Process theory deals with actors who organise solutions, and literature suggests that when situations require solutions to be created by the coming together of actors, then the processes of adding and subtracting actors over time, should be based on activities that are verb-based; i.e. experimenting, innovating etc. (as opposed to noun based on a plan, a budget etc.).

Understanding actors who attempt to create solutions in the context of uncertainty then *should* be a study of actors that themselves make sense of events by *not* affixing their activities on causality, measurability and quantification, but rather judgment.

But the researcher is also challenged, as studying actors who e.g. make sense, who enrol others and validate ideas, is a study that cannot be quantified and measured. The *researcher* also makes sense of events, tries to enrol actors (e.g. literature) to help make sense of the solution (thesis) and performs processes of validation (e.g. through data collection, but also discussions with supervisors, experts etc.) albeit with rigour. And crucially, these processes are also based significantly on judgment and data that captivates the researcher (capta). Particularly as this researcher is an action research consultant, the driving focus is to come up with practical solutions, and these processes are highly linked to sense making of the researcher. This researcher had for instance encountered the Lean Start-up approach of Eric Ries, and as it "makes sense" to this researcher it has been introduced to some of the actors who are part of the access2innovation program. In other words, this researcher also performs bricolage – assembling that which is available and makes sense.

To reiterate:
First, there are actors who are to be studied for this thesis so that their processes can be better understood.

Second, there is a researcher studying these actors, and the researcher cannot study all processes of all involved actors, although that would be very valuable. Then, this researcher has opted to try and identify (entify) certain criteria amongst the actions of the actors.

The actors are ***expected*** to behave, in the context of uncertainty by approaching their intended business through processes of making sense, enrolling other actors in order to e.g. validate ideas.

The criteria chosen for this particular study are dichotomised as follows:

- alleviating uncertainty is ideally based on processes of enrolment through blankness, judgment and sensing on behalf of the actor in question,

- and *not* processes of creating a plan, sourcing very specific actors, measuring or quantifying activities such as making budgets or calculating.
- By enrolling actors with a degree of blankness, these other actors form important parts of the validation processes.
- The study then is to investigate how actors make sense of events, enrol others as part of the organising of solutions and validation as part of figuring out if the solutions are viable or not

Regarding the task of ***researching*** processes, and this is equally important: the researcher who attempts to learn how actors act in the context of uncertainty, must also rely on judgment and sensing. The metrics or criteria, which are interesting to study ex ante, may not be as interesting ex post (indeed as the initial access2innovation model was not able to include the new ideas that emerged over time – as mentioned in the introduction to this thesis – is an example of how a planned process can be changed by the emergence of something that had not have been foreseen). What defines the actions of actors in the context of uncertainty should ideally *not* become a deliberate or hypothetic-deductive process. This researcher can instigate an investigation searching for specific criteria (as an attempt at rigour) but the researcher too must widen the scope of potential other attributes of the enactment of actors, so not to miss that which may have a greater explanatory power of what it is the actors are doing. As such the researcher will not only have wide discussions, but also attempt to make more deductive analyses of the data – vis-à-vis – search for specific criteria – the activities that are expected to be found amongst actors who try to create solutions in the context of uncertainty.

Then the main components of process theory and sense making at large reveal the following important attributes of what is expected to be found:

- As the commercial actors attempt to create something, they do so by *making sense* of the different inputs as well as enactment, and from there direct their attention at what they believe are important issues. "What is going on here?", and "What am I going to do next?".

- Creating collaborations with others in order for innovations to emerge is essentially a process of *enrolment*.; e.g. enrolling actors as part of validating ideas is particularly interesting to observe. The actors that are involved in projects are then enrolling each other in some way, and there are valuable insights to be gained from understanding the access2innovation processes in light of enrolment.

The process studies of commercial actors seeking to explore opportunities in Sub-Saharan Africa then is an analysis of the processes of enrolment and sense making in relation to uncertainty. The activities in access2innovation have so far yielded some understanding of what it means to collaborate between actors from different sectors, but since the activities of especially the companies seem not to fit with activities thought to happen, this thesis attempts to learn more of this. And from studying business models and Lean Start-Up approaches to business, and from studying literature on processes and sense making, the following framework is found to be appropriate for the analyses for this thesis.

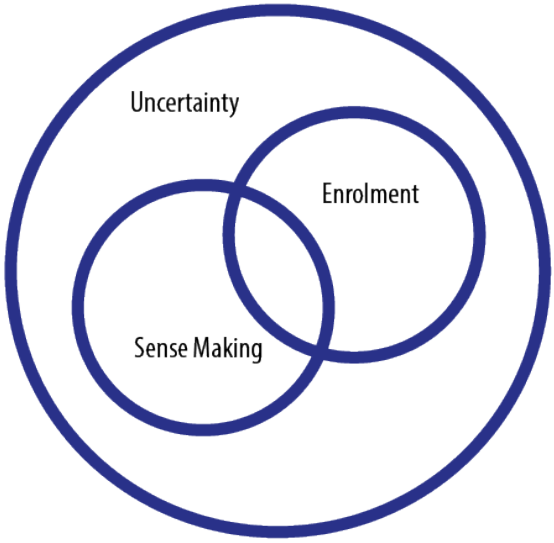


Figure 18: Theoretical framework of this thesis

Analysing the data collected for this thesis in light of this Enrolment-Sense Making framework, is an attempt at creating a better understanding of the actions of actors.

To remind the reader and for the sake of clarity of the different focus areas of this thesis work: the perspectives of sense making and enrolment are dealt with as separate entities, but in reality, they are inseparable. It could be argued that sense making processes always come first, but they never stop, where enrolment processes could be argued to only follow a process of sense making etc. The analyses that will eventually follow will reveal that these perspectives are intertwined and therefore not easily described in isolation.

Studying processes of *sense making* is here a matter of revisiting the data and finding evidence to support an argument of, e.g.:

- **Making sense of events as conditions of risk or uncertainty.**

If actors make sense of events as conditions that are stable or as a matter of calculating *risk*, then the enactment processes would include primarily noun-based activities of budgets, plans etc. (as mentioned in the discussion of stabilisation se section 4.2.9). This is another way of saying that what the purpose of the activities are relatively well-known and the processes that follow are created to help stabilise.

However, if the sense making processes of the actors studied here adhere to a situation of *uncertainty* then activities should adhere to verb-based activities e.g. innovating, experimenting, validating; the activities suggested as part of the important issues of dealing with uncertainty. The sense making processes of actors who do create solutions in the context of uncertainty are here thought to try and *discover* solutions by processes of enrolling other actors, and if needed removing actors. In other words, actors are *not* expected to be found forming activities of *finding* solutions (solutions *are* not – they are not "out there"), as there are no solutions – they must be created, and they must be created by enrolling actors. How this will become evident in the data is when actors add and subtract actors over time, as processes of *learning*. The logic is this: if what is to become a solution is not known beforehand and neither is the constellation of actors who will eventually constitute the final solution, the actors must attempt to learn through experimentation with other actors, to *discover which actors fit well together*.

The processes of sense making that are also considered important to investigate are those where actors *meshing of actors, interests and activities*, which are considered to be processes of *deduction of information* and the *induction through interaction with others*.

Analysing the data in terms of sense making will take careful consideration of the above-mentioned concerns, but will also utilise other vocabulary from literature to sensitise events, e.g. "in-here, out-there", routines etc.

Studying *other* processes of *enrolment* than the adding and subtraction of actors over time, is a matter of revisiting the data and finding evidence to support an argument of, e.g.:

- **Blankness or non-blankness.**

When dealing with uncertainty actors will by nature of being part of a process with many unknowns benefit from enrolling actors (human and non-human) with a blankness (openness), and not enrolling others by being specific or calculative. Blankness then is *not* a process in itself, but an attribute, a way to describe the enrolment process; i.e. blankness is treated as an adjective. In other words, is the enrolment process defined as being blank or not?

These enrolment processes can take many shapes and forms, and it will be interesting to learn the relations the studied actors have with others and how these relations influence the overall processes of the business activities. As mentioned earlier, when conditions are uncertain, the actors who are looking to discover and ostensibly create solutions are thought to enrol actors and adding and subtracting actors over time, as a process of learning. And the characteristic of the quasi-object – that around which other actors are enrolled – *should* be blank to allow others to inscribe attributes, thus attracting them. The opposite can also be imagined, where an actor is not blank, where the enrolment process will be by a predetermined set of characteristics that is looked for "out there". A process where other actors are thought (ex ante) to be enrolled as these actors are thought to fit precisely.

Studying processes of *validation* is a matter of revisiting the data and finding evidence to support an argument of:

- **External validation versus no validation (or internal validation)**

When innovating new solutions in the context of uncertainty actors are dependent upon experimenting with ideas and to perform external processes of validation; e.g. to include customers in the development process to learn at the earliest possible stage if the idea, product or service is viable or not (Validation is incidentally an integral part of the wider discussions of creating business models, and a business model approach is considered the most likely approach to succeed in places such as Sub-Saharan Africa – Kubzansky 2012). Validation is also understood specifically as a tool of alleviating uncertainty as the opposite – certainty – can only be attained by processes of knowledge creation. And as already mentioned in relation to Sense Making, *meshing of actors, interests and activities, which are considered to be processes of deduction of information and the induction through interaction with others,* are also processes of validation of sorts.

In combining the understandings of Sense making and Enrolment an avenue of research inquiry is open so as to allow an understanding of the processes of actors as they attempt to create solutions. Making sense is linked to enrolment, and vice-versa.

The terminology and vocabulary taken from literature and presented in this thesis have different opportunities for being utilised:

- **Sense making** is the main theoretical contribution for this thesis, and there are many different ways to talk about sense making; routines, verbification, in-here, out-there, journeying etc. The other aspects of Enrolment, Blankness and Validation are encompassed by Sense Making. They are all interrelated, but some are readily more identifiable in the data than others. This study is not a study of all the events of an actor and how that actor makes sense of them, but more of sensitising the case data by use of a vocabulary from sense making – as the data permits.

- **Enrolment** in itself is a wide concept and can be investigated in wide terms, as a matter of discovering how actors enrol other actors. This will be attempted in the analysis to some degree. But the particular condition of Blankness is interesting as it yields a fruitful understanding of the driving actors in particularly relation to uncertainty: Do the actors allow other actors to inscribe attributes to the solution or not, in order to alleviate uncertainty? Do they perform activities of learning or not? By focusing on blankness, the thesis makes some arguments about how relations form and the nature of relations (networks/networking). In yet other words, the study of the processes of enrolment is also a study of how networks/relations are formed.

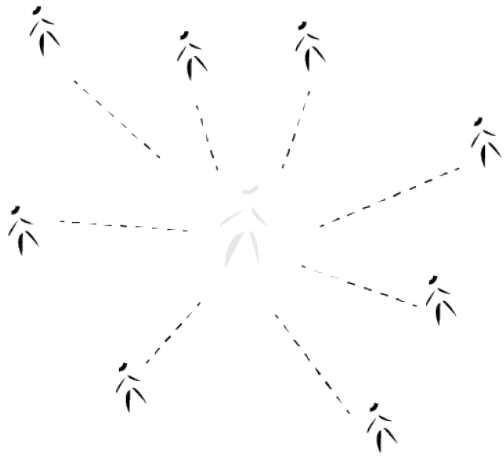


Figure 19: The processes of enrolment and the aspect of blankness

The study will attempt to visualise the adding and subtracting of actors in a process perspective and give some assessment of the actors in terms of blankness (Fig. 19). And particularly Validation is an important aspect of commercial enterprises, and as literature suggests that actors should validate their solutions with others, it will be interesting to see how the actors do this – if at all! The processes of validation include aspects of Exploration, Blueprinting and Validation - (followed by Preparation and Scale – although these are not investigated here).

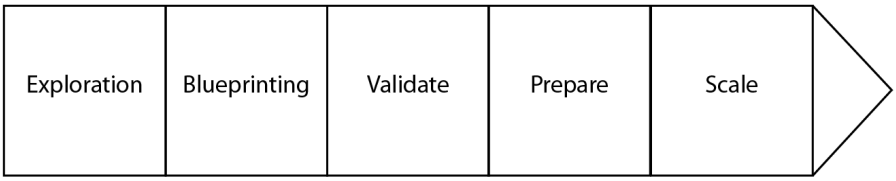


Figure 20: The envisioned steps of creating solutions, adopted from Koh et al 2012

The study will attempt to identify if the processes of the businesses adhere to this model (Fig. 20), or if they behave differently, or even if the model must be expanded.

How to study actors in terms of enrolment, sense making, validation et al, is the topic of the next chapter.

5 Methodology

Chapter abstract:
This chapter addresses the theory of science and methodology discussions of this thesis and the researcher who writes it. The chapter addresses the challenges of performing process theory studies and what it means to follow actors as they act.

The chapter also addresses this researcher's own processes, e.g. of having one certain focus and then later changing focus.

The data analysed in this thesis consists of primarily data collected throughout the action research process performed as an access2innovation consultant. However, most of this data was collected with the purpose of discovering the processes of creating business models in Sub Saharan Africa. And since the thesis perspective has changed to a wider study of processes of the businesses, interviews have been conducted ex post to gather specific data to supplement the action research data.

Action research, case study methodology and case selection are the main points of this chapter, and efforts of trying to link these discussions to Process Theory will be made throughout the chapter.

The previous chapter was a comprehensive discussion of processes, which included discussions of what processes are and how actors makes sense of events. This chapter will discuss in theory of science and methodology terms what it means to study the processes of actors.

Research undertaken for this thesis has been conducted in part by actively engaging projects and actors through the access2innovation program through an action research approach, coupled with specific data collection ex post, to learn of the cases studied here in a more research motivated fashion. The access2innovation activities have been primarily focused at reaching *practical* results for and with the partners of the program, where research has been based on activities of following these actors.

Thus, the vast majority of data utilised for this thesis is collected as part of the daily operations (more detailed descriptions of data will follow later) of an action research consultant. Most of this data was collected with the initial intent of the researcher – to study processes of creating business models – but the intent has shifted to a wider discussion of the sense making of actors. The data is therefore supplemented with interviews ex post to introduce primary data purposefully collected for this wider process study.

The thesis then has two main sources of data: the action research data and ex post interviews.

However, as data has been collected in part through action research processes and in part through interviews, the analyses are structured as case study analyses. And as case studies vary, this thesis has attempted an *embedded* case study, where the access2innovation is the *overall* case and the *embedded* cases are companies who act together with access2innovation (elaboration of this will follow).

The purpose of the study is to arrive at a more sensitive understanding of how commercial actors act in processes of creating solutions. The findings may be valuable to access2innovation and other facilitating intermediaries.

This chapter includes:

- Case study methodology: the main thoughts from literature of cases study approaches
- Action research methodology; the fundamental aspects of action research and the overall data collection approach of this thesis
- The specific data collection methods, plans, executions and reflections of this thesis
- A discussion of the choice of theories to sensitise the problem field of the thesis

- And finally, an integrated research design for this thesis, which includes how data is collected and how theory is administered to sensitise the data

5.1 Case study methodology

To utilise a case study method may be practical for this thesis, but there are differing opinions about the reliability and validity of case studies in general. But case studies are in themselves valuable, and incidentally not far from action research (see later section) in terms of the value of such studies. Some of the arguments that will be addressed here are followed by a more practical assertion of what it means for this thesis.

Discussion of case study as scientific method can be dated all the way back to Max Weber in the mid 19th century to today, with some thinkers and researchers changing their perceptions over time.

Case studies, which have been extensively discussed by Yin (1993) and enclosed in collative case study articles e.g. by Scholz and Tietje (2002), are generally considered as belonging to various types of cases studies and understandings of cases.

Dimension	Classifications
Design	Holistic or embedded Single case or multiple case
Motivation	Intrinsic or instrumental
Epistemological status	Exploratory, descriptive, or explanatory
Purpose	Research, teaching, or action/application
Data	Quantitative or qualitative
Format	Highly structured, short vignettes Unstructured or ground breaking
Synthesis	Informal, emphatic, or intuitive Formative or method driven

Table 2: Dimensions and Classifications of Case Studies
Source: Scholz and Tietje 2002

Cases are fundamentally either holistic or embedded, but how to conduct studies within these concepts, is interchangeable, e.g. holistic studies are fundamentally based on qualitative approaches, where embedded studies allow for quantitative but also qualitative studies. Another perspective is that the researcher may be intrinsically and *personally interested* in a study, or the researcher may have no interests in the case and is searching for *instrumental* findings. Case studies are thus defined by their design, motivation etc. but case studies are not predetermined in design because they fit certain criteria. In other words, a certain combination of characteristics does not mean a study *should* be performed in a certain way. Just because the researcher is e.g. personally motivated by the study, focuses on companies based in Columbia, centred on the topic of human rights - then the study should include two personal interviews, one focus group and so on. Case studies are not designable through a certain set of predefining rules, although there are fundamental approaches to studies, where one type of study is inclined to use rather than another, e.g. qualitative and/or quantitative methods.

Researching cases is about applying multiple sources of knowledge and to integrate this collected knowledge.

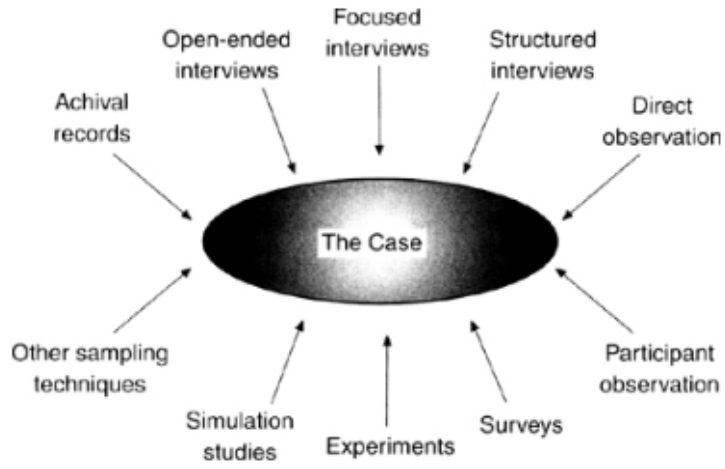


Figure 21: Using Multiple Sources of Data and Evidence
Source: Scholz and Tietje 2002

The embeddedness of the studies conducted for this thesis is understood where the informative and overall case is access2innovation and the embedded cases are the studies of activities of companies who are part of the access2innovation program. And the perspective of analysis is to study the embedded cases as an attempt to inform the overall case, and the methods available include, as Figure 21 denotes: open-ended interviews, observations, experiments and almost anything one could care to think of. The challenge is then to arrive at a junction of sufficient data points so as to allow for conclusions to be drawn from the case studies.

5.1.1 Criticising case study methods

The greatest critiques of case study methods have been discussed by Flyvbjerg (2006b – Flyvbjerg is a proponent of case studies) where he discusses the "Five Misunderstandings About Case-Study Research" (2006b, p. 221, italics in original):

Misunderstanding 1: General, theoretical (context-independent) knowledge is more valuable than concrete, practical (context-dependent) knowledge.

Misunderstanding 2: One cannot generalize on the basis of an individual case; therefore, the case study cannot contribute to scientific development.
Misunderstanding 3: The case study is most useful for generating hypotheses; that is, in the first stage of a total research process, whereas other methods are more suitable for hypotheses testing and theory building.
Misunderstanding 4: The case study contains a bias toward verification, that is, a tendency to confirm the researcher's preconceived notions.
Misunderstanding 5: It is often difficult to summarize and develop general propositions and theories on the basis of specific case studies.

In Flyvbjerg's conclusions he fundamentally speaks of case studies like so many other studies should not stand alone in social sciences as indeed quantitative large-scale surveys are useful for some research, as case studies are useful for others. He acknowledges that a single case study does not in itself permit the creation of a new social theory, but he refutes that it cannot *contribute* to it. The point Flyvbjerg addresses and those he refers to, is that social science in itself does not have finite social theories. Nothing ever *is* in human interaction (much as the previous discussions of the processes of organising and groups *are* not, they are always *becoming*). Any rigor of social science Flyvbjerg considers is that which is *not*. Social research can only adhere to scientific truth in what is *not*, than what is (which, as discussed earlier too, also has connotations to Latour's negative understanding of theory in social sciences – as researchers are more likely to know what *not* to do than what to do).

The discussion of case study research in terms of validity and reliability should first be a discussion of the main idea of doing social science at all. And Flyvbjerg adeptly addresses the issue of *learning* (note to the reader – the perspective of learning is also what researchers may learn of actors, how they make sense etc., as some actors set out to learn and others do not).

If social research cannot yield the truth in form of unquestionable theory, it can however yield *learning*, and learning is at the primary of any research. An example utilised in the discussions is that of novices and experts: as a novice, or new-beginner, it is useful to adhere to the rule based knowledge from books, but to become an expert one needs to address the context in practice, one at a time. Any expert is someone who has worked in practice with a certain topic in several different situations, one at a time, over time, and therefore has gone beyond studying books to also offering the acquired knowledge into practise. But an expert might have been able to become an expert indeed from practicing it, but this might also be helped from reading about it. So "choosing" a method as superior to another is somehow not fruitful, as some methods are useful in some cases and other methods in other

cases. Social researchers should for all intents and purposes strive *not* to prove something, but to *learn*:

"As for predictive theory, universals, and scientism, the study of human affairs is, thus, at an eternal beginning" (Flyvbjerg 2006b, p. 224).

Flyvbjerg then also has relations to the ideals of action research, as he elaborated later (*knowing* – which incidentally is a verb based actor of sorts - is more important than *knowledge* – which is a noun based actor).

But for all the benefits of a case study research it can still be a poor study, as is also true of any form of research in social science, as *the researcher* too is very important. The case study method requires practical competencies of the researcher. Effectively, if the researcher has no practical experiences with that which he studies he will not be able to study it significantly. It seems Flyvbjerg is saying that a case study is more informative if the case researcher e.g. has many years of practical experience as compared to, say, an under-grad student at university. Interpreting this sentiment one could argue that in order to "see it" (as in being able to observe something), one must also be "*able* to see it", and with vast practical experiences a researcher would theoretically have observed many things before, also be able to recognise many more things, compared to having no practical experiences (similar discussions can be found of *bounded rationality*). For a case study methodology discussion, this is not specifically important, but the idea that a case study cannot provide knowledge, which can lead to new theory, is questionable, as a case study can *contribute* to a wider cumulative study of cases from which learning can be achieved. This perspective suits the access2innovation research ethos, as teachings from contextual case studies evolve and inform future work within in access2innovation and the subsequent case studies and so forth (an example of this is how the case of Sky-Watch in this thesis, has been analysed before in a previous dissertation, but is revisited here with other perspectives, i.e. a learning process).

Case study arguments also fall within some of the arguments of how to *organise innovation processes*, as what *makes sense* in an innovation process can only be understood afterwards, which is another way of saying that a researcher cannot hope to foresee in advance what he does not know he will see. Case studies then offer opportunities to unearth matters that have not been planned for, much as innovation processes do (albeit with potentially very different outcomes, purposes and interests). So, the theoretical interests of this thesis do have a reasonable fit with the elected research methods.

A case study in itself however is debateable. The classical scientific method would express that any data should be reflected in light of theory, where case

study proponents would submit that case studies should be stories told in its entirety without adhering to a hypothesis-deductive paradigm. By making a "thick description" (Geertz 1973) of a case; i.e. detail as much about the case as one can, be it relevant or not for the article or thesis in question, the researcher will become able to unearth the details that signify the particular case, and at the same time allow other researchers who read the work, the opportunity to adhere meaning (sense making) and inscribe attributes to the case (which then would seem to have blankness) in a different view using other vocabularies and terminology. Case study then seems to be distinguishable from other research methods, and at the same time not comparable, as case studies have "their own system" of learning (Flyvbjerg 2006a).

The fourth misunderstanding mentioned above, will be addressed shortly as it is pertinent especially for this thesis, as it has a great influence on how to conduct the research for this thesis, and also the theories chosen here.

Misunderstanding 4: The case study contains a bias toward verification, that is, a tendency to confirm the researcher's preconceived notions.

Case study and action research (as is discussed in following section) have common ground in that both can be accused of a bias toward verification, but in both perspectives the involvement of actual actors, in action, in cooperation demand practical results, not theoretical results, and from this a researcher is much more likely to achieve falsification than verification. It is much more common for action researchers and case study analysts to throw away preconceived ideas than it is to see the same researchers sticking to ideas when reality does not fit with them (which by the way is a process of validation in it self). Both research approaches are then mentally akin, and both offer great opportunities for learning not only for this researcher in practice, but also – if the researcher is able to convey the findings with enough detail – for others that wish to investigate the data in another light. But crucially, the case study approach and that of action research fall within the greater understanding of this thesis – to learn of actors who deal with uncertainty. In other words, the studies here deal with attempts at solving complex social problems, which have yet to be solved by any known approaches, and studies should therefore be very limited in hypothetic-deductive reasoning, as current rationalities have yet to prove themselves valuable in practice (the paradigms of solving complex social problems in places like Sub-Saharan Africa are arguably not working). Some other form of approach is needed.

However, the analysis, as this researcher has attempted to explicate, should have a narrower focus so as to mitigate the analysis from becoming too

abstract and holistic, so too must the main research focus. So, in order to focus attention on some specific areas of the study this researcher also includes findings and discussions that other researchers might be able to work with; i.e. akin to a thick description.

Process theory then, as this researcher interprets it, also gives fuel to discussions of case study methodology. If a case study is embedded, then the embedded cases are studied as their linkages to the overall case may be brought forward and help create a better understanding. But to assume that an embedded actor (e.g. one of the cases studied here) acts *only* in relation to some other actor (access2innovation) seems to offer only an entified view.

Embedded case studies and holistic case studies are then not easily demarcated, when considering process theory. Maybe a significant contribution of this thesis is the need for a better understanding of how to perform *embedded process case studies*? Or rather to raise *awareness* that case studies with a process perspective need to overcome the dichotomy of embedded versus holistic views of case studies?

Before delving into how the case study has been designed, the specific research methods applied etc., a few considerations about the action research based approaches of access2innovation are important to mention.

5.2 Action research

In access2innovation an action research approach is the main research perspective for the following reasons:

- The program is designed to create practical results, much to a degree of any other government program.
- It is (was) believed that the actors, who join the program, are affected by access2innovation workers, and access2innovation workers are affected by the actors, and also any other actor – human or non-human – which may influence the processes.
- Data then becomes a matter of collecting information, through participatory research, about actors either as recordings and observations when possible, or through diligent note writing on behalf of the research personnel within access2innovation.
- Action research then is pertinent as it is a research perspective lending itself to influence practice, for the sake of practice, from which research can be drawn.
- Action research is also relevant by virtue of the purpose of access2innovation – to solve complex social problems, which is a

significant reasoning behind the creation of action research to begin with.

A credo could then be designated as follows: there are problems in the World, which need to be solved, and this is the main driver of access2innovation.

The design of the access2innovation processes, in which researchers could interact, were basically:

- Identify unmet needs in East Africa together with NGOs.
- Recruit Danish companies to have look at these needs.
- Create a platform of collaboration between all parties involved, and the access2innovation workers would facilitate proceedings, taking on assignments as they arose.
- All companies had to apply to be submitted to the project. Herein applicants had to show what their business model would look like and the steps they intended to take to reach their goals.
- When accepted to the program workshops would be had to allow those with insights, knowledge and access to meet and address questions.
- As access2innovation we essentially promise to find contacts, but do not promise what will come out of meeting these contacts.
- The business model approach to business is a requirement for companies to be introduced to, as part of the beginning of the partnerships.
- From there steps are taken to arrange trips to visit different actors home and abroad.
- From a research perspective, the activities would be followed to allow adaptations and new insights to be introduced. If actors got stuck, access2innovation would try and help unstick the situation.
- There was not a specific model of interaction, other than the companies would only receive assistance if asked for.
- And access2innovation would pressure partners in action if they did not do it themselves (part of the argument for having a facilitating intermediary (Ravn 2012)).

The slightly different take on the actors for this thesis work, is that of *how* the actors and their actions are *perceived*. Action research, as will elaborated at length shortly, deals with the interaction of action researcher and actor(s), and the researcher pays special attention to the interventions made by the action researcher in a plan, implement, reflect, plan, implement fashion. However, to study the *processes* of the actors is a more holistic type of study in that this study essentially is an attempt to understand all the processes the

actor goes through, regardless of whether the, in this case, access2innovation consultant has influenced the proceedings or not.

Action research and process analyses are not substantially different, but the literature discussing these theoretical fields are.

The chapter here then seeks to draw out the theoretical considerations of studying actors as they act, and to explicate how to conduct the analyses accordingly. Where the action research perspective speaks of the way data is collected, process theory both informs the analyses in terms of *what* to look for but also *how* to look for it. A process study then can become quite substantial (as discussed earlier), which encourages this researcher to structure the analyses with a case study approach.

To reiterate:

- Action research is the main driver in how the main portion of data is *collected*.
- Process theory and analyses introduce certain aspects of how the data can be *interpreted*.
- And an embedded case study analysis allows for a more *structured* discussion of the different cases.

5.2.1 A short history of action research

Action research was coined by Lewin (1951), who realised that there are social inequalities and a need for science to solve practical problems. Lewin's cyclical model of concrete experience – reflective observation – abstract conceptualisation – active experimentation formed a structured approach to theory building based on action research.

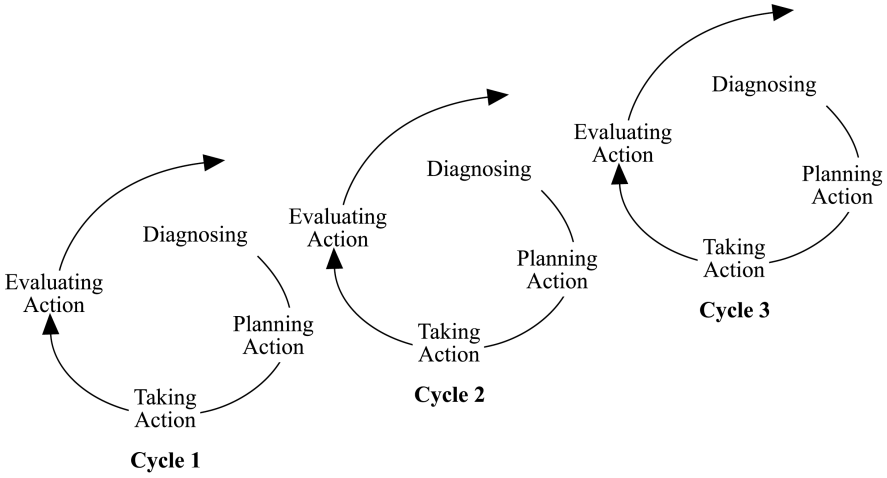


Figure 22: Action Research Cycles
Source: Vignall and Zundel 2003

A later definition of action research, which is quoted often in action research literature:

"...a participatory, democratic process concerned with developing practical knowing in the pursuit of worthwhile human purposes, grounded in a participatory worldview which we believe is emerging at this historical moment. It seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people, and more generally the flourishing of individual persons and their communities." (Reason and Bradbury, 2001, p. 1)

Action research can also be understood as a departure from social science where reductionism tends to simplify matters to congeal scientific output in condensed form, whereas action researchers tend to adhere to the understanding that such science does not yield many hopes of practical application as reality is much more complex than any reductionist approach. This in turn fuels the discussion of action research as a means to build theory, where a traditional approach to theory building is based on a perception that reality can be drawn out by viewing the community of inquiry, where action researchers believe that reality is created in the community for the sake of the community; in effect, action research purports local realities rather than to hope for *one reality* (Reason 2003). Thus, the ideal of theory building as knowledge, needs to be addressed, as action research tends to adhere more

importance to *knowing* than *knowledge*. The disparity must be understood in light of the purpose of action research as not a better way of theory building (i.e. to create knowledge) but as a means to deal with practical problems first (where those that experience the problem will come to know how to deal with the problem), from which science must learn what it can.

Flyvbjerg (2006a, p. 39) also addresses the challenge of current social sciences (as he coins scientism) as something that is based on the idea that *"science holds a reliable method of reaching the truth about the nature of things, which continues to dominate the social sciences. But scientism in social science will continue to fail, because the reality of social science does not and cannot live up to the ideals of natural science".* In effect, social science in its nature will never reach the rigidity of natural sciences, and researchers must endeavour to come to terms with the fact that there are no universal truths nor models in social sciences.

The challenge of extracting knowledge from action research is especially linked to another discussion that *actors tend not to know what they are doing anyway* (Reason 2003), and to study them then also becomes a matter of interpreting actions not as causalities but as mere actions. This lends itself very well to the perceptions of studying processes as has already been discussed at length.

Theory building from action research then is basically difficult if not impossible, but there are diverging ideas about this particular issue, as well as there are different approaches to action research. The action research concept is not homogenous and allows for variations in understanding, such as appreciative inquiry, action science, systems approaches and action learning (overview article by Dick 2004), but: *"As disparate as these traditions are, what links them is the key question of how we go about generating knowledge that is both valid and vital to the well-being of individuals, communities, and for the promotion of larger-scale democratic social change"* (Brydon-Miller et al, 2003).

So, action research could be criticised for promoting theory as something only to do with solving social problems, which is basically saying that there are no *general* theories – only *workable* theories. Action researchers would counter by saying that social science has never in its history been able to provide a social theory with any lasting credence, as reality is always constructed.

Action research is in principle not a very precise approach. Lewin (1951) views the approach from a socio-technical perspective where others (Raelin 1999) consider action research as a discussion of pragmatism through critical and utopian perspectives. From these varying approaches to action research a

few significant highlights that action research can indeed be understood differently:

- Subject studying subject or object and subject
- The researcher can be facilitating or observing
- The research can in practice seek to reach a normative goal as pragmatic or utopian.
- And data can be acquired both through qualitative and quantitative methods

There is no fixed demarcation of different action research approaches, however a few researchers have attempted to create an overview.

Greenwood and Levin (2007) have attempted this overview of what they coin the "alternative systems" and have come up with this (p. 207):

"A Selection of Terms and Names for Alternative Systems of Participatory Learning and Action:

AEA Agroecosystems Analysis
BA Beneficiary Assessment
DELTA Development Education Leadership Team
DPR Diagn6stico Rurale Participative
FPR Farmer Participatory Research
GRAAP Groupe de Recherche et d'Appui pour /'Auto-Promotion Paysanne MARP Methode Acceleree de Recherche Participative
PALM Participatory Analysis and Learning Methods
PAR Participatory Action Research
PRM Participatory Research Methodology
PRAP Participatory Rural Appraisal and Planning
PTD Participatory Technology Development
PUA Participatory Urban Appraisal
PFR Planning for Real
PD Process Documentation
RA Rapid Appraisal
RAAKS Rapid Assessment of Agricultural Knowledge Systems
RAP Rapid Assessment Procedures
RAT Rapid Assessment Techniques
RCA Rapid Catchment Analysis
REA Rapid Ethnographic Assessment
RFSA Rapid Food Security Assessment
RMA Rapid Multi-Perspective Appraisal
ROA Rapid Organizational Assessment
RRA Rapid Rural Appraisal

SB Samuhik Brahman oint trek)
SSM Soft Systems Methodology
TfD Theatre for Development
TfT Training for Transformation
VIPP Visualization in Participatory Programmes"

Action research however also includes appreciative inquiry, action learning, human inquiry, collaborative inquiry, cooperative inquiry etc. And the latter is considered to entail different established epistemological forms of inquiry; experiential knowing, presentational knowing and propositional knowing and so it continues.

Needless to say, that there is a plethora of perceptions of action, learning, knowing, knowledge etc. Due to the very different ways to conduct action research signifies the heterogeneity of the action research paradigm and it is for the researcher therefore very important to be clear about the purpose of the study and how the researcher best believes to fulfil this purpose.

Of the adopted approach of all these different action research approaches for this thesis is the Participatory Action Research (PAR), which is arguably a more common coinage of action research.

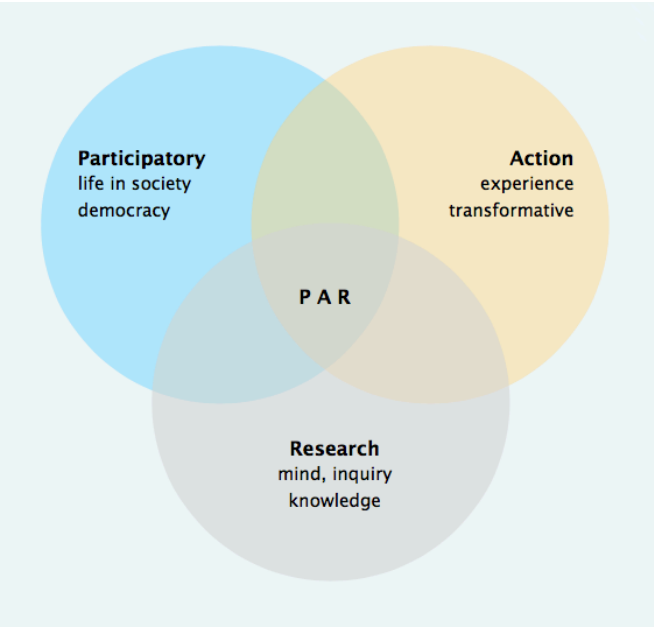


Figure 23: Participatory Action Research (PAR)
Source: Chevalier and Buckles, 2013

PAR is the method of affecting practical change with those that practice change. For the PAR researcher, it is a matter of forming actions through research and participation in the case which is actionable, from which reflections are made and new research are introduced to further the actions so that the desired outcomes are reached. In access2innovation this is for instance defined by activities such as:

- Forming collaborations with NGOs
- Seeking out unmet opportunities
- Enrolling companies to help meet these opportunities.
- Reflecting on processes and finding issues that need to be addressed
- Connect with researchers who can enlighten how to address the issues
- Try and work with the models and come up with solutions
- Reflect
- etc.

Choosing PAR for access2innovation is based on the overall agenda of reaching actionable and practical results for the purpose of reaching results. Researching these activities are primarily required by those that fund the activities so that continuing the access2innovation becomes possible and knowledge does not become lost.

The most significant challenge with conducting action research though is validity and reliability as the approach places great importance on not only the data but on the researcher too. Doing action research as facilitation can yield data that is more valid where an observer might perform a study with greater reliability.

5.2.2 The role of the action researcher

The primary purpose of the action researcher is to be part of a process that leads to change.

And this is where the research intention of this research, and this thesis, reaches a cross in the road. The change observed during the years of access2innovation did not always seem to be due to the changes introduced by the access2innovation action researchers.

The question is though if the acquired data and knowledge can be extracted and indeed if change has happened at all. Herein lies a difficult issue of action research. If the researcher believes the change has happened in practice but

in reality, it is only the researcher who has changed, then the purpose of action research has not been fulfilled. So, the researcher must be very aware of his role, the interventions he introduces into practice and what consequences these lead to, but the paradigm itself does not specifically address the role of the researcher (Reason and Bradbury 2006).

The self-consciousness of any researcher will of course be questionable regardless of who is the researcher; a student at a university would by the relative lack of practical experience maybe not be able to perceive subtleties in the data and might therefore not be able to arrive at a representative picture of the research; i.e. the student's self-consciousness might in itself not be false but it might not be enough for practice, where a seasoned practitioner might indeed be able to influence practice and make significant practical changes, but be less conscious about the interventions as some of them might be routinized over years. The inner workings of action research are principally difficult to discuss thus forming another critical point to make of the paradigm (Eikeland 2006).

5.2.3 Reliability

Action research as conducted in a specific context by a specific researcher(s) will produce knowledge, which is difficult to replicate by others, whereby it raises the question of the reliability of the approach (Hellevik 1997), as the background of the researcher will shape any intervention, planning, implementation and observation conducted by the action researcher and any theoretical or practical preferences there might be. Any other researcher conducting the same study would in principle conduct it differently, thus leaving the research unreliable. Essentially action research conducted by one researcher can yield results that another researcher in the same context with the same purpose would not reach. But unreliability has been deemed a necessity in the pursuit of solving pressing social problems, as the paradigm is more intent on pursuing validity than reliability.

5.2.4 Validity

Discussions of validity in any research methodology is the discussion of whether the researcher is indeed researching that which is intended, and subsequently if the findings drawn out from the research process can indeed reflect that which was the intention with the research. Herein lies the strength of action research, as it is almost entirely focused on validity, but that does not suggest that validity will come naturally. Validity must be constantly in focus of the researcher so that there is coherence between the

empirical studies, the choice of methods and the applied theories (McGrath and Bringberg 1983).

So, to conduct action research is, liken to other research methods, to be significantly aware of all aspects of knowledge production from the higher reaches of philosophical ideas to practical studies.

(In reflection of this researcher's own process, the realisation halfway through the studies that the commercial actors under study, did not create business models, as was the perspective of the thesis, was a case of validity. In other words, the purpose of the initial study was proving invalid, which then forced the researcher to change perspectives – these circumstances are presented in section 5.4 below)

For the *pragmatic* perspective on action research these are the main concerns (Nielsen 2006, Bitch and Pedersen 1999):

Ontology: There are no universal laws, thus reality is understood as unfinished and is therefore malleable through human interaction and intervention (which rather sounds like what theories of process also suggest).

Epistemology: To create knowledge in a world with no universal laws, in the action research tradition, is to go beyond hermeneutics of dialogue and interpretation. The researcher should motivate action and also be part of the action (to make sense is to enact – again a process theory connotation).

Methods: Primarily qualitative studies, experimentations and circular learning phases (processes of enrolling other actors, understanding, judging and validation).

Theory: To use theory is to apply a set of understandings of the researcher, which must be explicated. But to arrive at a new general theory is not feasible as the study is context dependent (but new theory can be generated if it is able to inform the practical work of practitioners - Reason 2006).

Knowledge focus: It is not only the ideal of action research to collect data, but to induce change through action. (now the researcher is not only observing processes, but becomes part of the processes)

The fundamental challenge of pursuing validity in action research has been the subject of study of McGrath and Bringberg (1983) and these are the main guiding principles:

A. External validity is important and complex part of action research.

But general knowledge is logically not realistic due to the context dependency. And also, there are behaviours of actors, which are not linked to the proceedings of the research that can be attributed to other things than the interventions of the researcher. The external validity of a singular action research process is to not complete a new general theory but to introduce the processes of solving pressing social problems from which others can learn what they can.

B. Inherent limitations of the action research paradigm.
The limitations of action research as a research paradigm is discussed in relation to other theory generalising research efforts. Action research does not seek to create general theory, but to create that which is relevant (Eden and Huxman 1993) – also coined as the discussion of 'relevance over rigor'.

C. Inherent limitations of the methods
All research methods have inherent limitations as does the action research methods, however the classical research methods are applicable in action research only when the basic premises of these methods are understood (Reason 2006).

D. Importance of the researcher's understanding of theory and empiric data
Any action research results will by definition be clouded by the researcher's own perception and understanding of events and any inherent preferences therein. Action researchers would counter that to study groups of people is not only a matter of the preferences of the researcher but of others too as actionable results must be provided; i.e. the actors must introduce what they believe 'makes sense' to them for collaborations to work and any results taken from studies of such events will yield a significant research result (Rønn 2006) (action research then encompasses, discussions of case study methodology *and* process theory)

E. The purpose of the research
Action research is conducted with practical purpose and by use of varying methods. There is a practical reason for the research and getting to actionable results may require altering methods accordingly.

F. Sampling
McGrath and Bringberg (1983) believed there to be certain amount of sampling techniques that would help research from new generalizable theories. But action researchers would argue that sampling in itself is not enough (Auginis 1994) as this will only form part of the picture. Respondents that are fitted into for example a survey will not yield the same results as studying actors pursuing their own ideas and understanding of goals, which is essentially what action research is about.

Therefore, the fundamental approach to how data is collected for this thesis, is action research.

5.2.5 Action research, thesis and access2innovation

The many concerns of action research and also the focus on solving social problems, have been discussed but what does it mean for this thesis, and for access2innovation?

One of the purposes of this thesis, apart from being a PhD thesis, is to help inform primarily a discussion of how to conduct the work of access2innovation, and secondly to inform other similar initiatives focused on solving social problems in the context of uncertainty, through market-oriented approaches. And the overwhelming governing perspective is to achieve practical results. Research then becomes less prioritised, which is why the case methodology approach has been introduced in this thesis, in order to revisit the cases that have been worked with in access2innovation and to introduce data from ex-post interviews, to create a more research narrow perspective on the vast practical challenges of operating access2innovation as a consultancy.

5.2.6 Action research and other traditions

Comparing a *consultative* or *participatory* approach to action research as is the main perspective of access2innovation and a more *anthropological* approach this thesis is arguably treading on both paths.

The anthropological approach to action research speaks of a more detached reflection in part of the researcher and the field of study. The terminology applicable to discuss the differences between these two approaches to action research can be found in various forms (e.g. Miller and Whicker 1999), but interestingly the previous discussions in this thesis pertaining to case studies also seem pertinent in this discussion.

Case studies, as has been discussed, are holistic or embedded, action research as anthropology tends to be holistic, where a business economic approach would be more embedded as well as participatory. It could then be argued that the whole process of research conducted for this thesis should fall within either one or the other. However, the realisations that led to this thesis (please read the section "This researcher's own process" below section 5.4) and the manor by which the data has been collected and ostensibly analysed

come from both camps. The initial studies were very much an attempt at working out how actors act as in the embedded case study approach, but the realisations that these initial studies were yielding unexpected (or rather inconclusive) results, led this researcher to take a more holistic approach in an attempt to identify why the research approach was not yielding anything. From these considerations, a new research agenda emerged and thus returned to a more embedded case study.

In other words, the main thrust of this thesis is based on an embedded design ethos, but the whole process of research conducted for this thesis cannot be separated from this researcher's holistic analysis from time to time. In a more down to earth sort of way, researching here is a matter of sticking one's head into the cases, and when the research got side-tracked or yielded little if anything, the researcher would rise up into the higher and more holistic understanding of what was happening in access2innovation, identify another perspective of analysis and go back into the embedded approach. Thus, the *process* of studying actors may for the purpose of a thesis be neatly identified as either being anthropological/holistic or embedded, but the influences on the action researcher cannot strictly be separated (entified or black-boxed) as being only holistic or embedded.

But if a certain action research based method can be said to be dominant for this research it is the participatory action research. And the reasons for this is mainly that the overall agenda has been to create practical solutions with the participating actors.

However, as the motivation of the research approach of this researcher was originally to learn how companies create business models, the workshops, the interactions between companies and access2innovation and the subsequent new actions, yielded inconclusive results. The data then was collected as processes of :

- Introducing companies to opportunities in Sub Saharan Africa through workshops
- Introducing the business model approach
- Following the companies as they tried to uncover opportunities and what to do about them – and in part to meet with the contacts access2innovation had prepared prior to the visits
- Collect questions that the companies might have after e.g. visiting East Africa, and then the access2innovation staff would see if other researchers or practitioners might be able to answer these questions.
- And access2innovation would fulfil its purpose when a successful facilitation between pertinent actors was made.

The processes of access2innovation were designed at first to proactively suggest courses of action, with the sole purpose of giving the companies in particular a starting point from which to evolve.

Data collected was then wide and not always specific in a hypothetic-deductive fashion, but this researcher did try to se how the business model mind-set was applied and to learn what other action research based activities could help promote this mind-set. But as a whole the access2innovation method failed in this particular regard. So, the thesis here may be based on data collected in a participatory action research based fashion, but it is revisited with new perspectives, coupled with interviews of the focal actors to enhance an understanding of these actors.

What can be concluded from the access2innovation action research based approach is that the companies, at least, have been assumed to act in a certain way, and the preparations for workshops and introduction of tools have been based on this assumption. But as the assumption seems not to be viable, the thesis here tries to remedy this by looking at the data all over again from new perspectives. And a guiding light in all this is that access2innovation is built on participation and cooperation, but there were not really strong signs that all partners in access2innovation actually acted accordingly. The action research approach for this study is then only interesting in terms of how most of the data is collected. And the perspectives of process and sense making have come after.

5.3 Analytical process

The theory provided here and the data collected as part of the action research process as well as the data collected ex post through qualitative interviews for the purpose of a forthcoming case study, hope to divulge a greater understanding of actors as they create solutions.

Returning to the main topicality of the theories behind this study, these are the main concerns:

Sense making: Enactment, Organising, Verbification, Stabilisation and Meshing
Enrolment: Networking, validation and blankness

The concepts of sense making are universally understood. In other words, it is thought that especially commercial actors will have processes of sense making regardless of context. Sense making that is of particular interest for

this thesis are those that are *expected to* be found; i.e. processes that mimic innovation (experimentation, learning etc.) more than stabilisation (consolidation, budget, plans etc.).

The processes of networking and enrolment are here understood contextually and are therefore value-laden. In other words, the processes of enrolling others *should* reflect actors as they try to fill out the blanks of the ideas or concepts they hope to create (i.e. processes of learning). The process of enrolment as seen from any non-human object (quasi-object) is not strictly relevant for this thesis, as the parameters of uncertainty essentially suggests that there are no objects, goals or entities with any clarity to begin with, around which to gather other actors. As the entrepreneurs (the humans) of the cases studied here then become the guiding and driving forces of the solutions that are created, then the people, the individuals, the commercial actors themselves become the object of interest for this study (they are the quasi-objects at one or more points in time). Are they blank? Are they able to allow others to inscribe attributes onto them? Since there are no certain goals, there are expected to be processes of experimentation and validation from which to guide the processes that will follow.

Analysing the data with these analytical perspectives cannot be designed nor performed a priori; e.g. with a unilateral understanding of what perspectives are relevant, what the data is designed to show and a structured approach to analysing it all. To study the processes of actors who act is to *allow the data to speak*. The different cases reveal different sets of data, and also the processes of making sense as well as the processes of creating the data is something that has been done, whilst this researcher has been intertwined with the respondents, affecting and being affected by them.

The analyses then are largely conducted ex post, but the data is a mixture of data collected for different purposes in an action research approach, as well as data collected ex post with a specific intent to inform this thesis. As a researcher, it becomes somewhat a big challenge to try and entify different sets of data to suit different parts of the analyses, and as this is not strictly possible all the time, it is at the awareness of the researcher that the data is more valid than it is reliable.

The concepts of bracketing, entification etc. are all part of what the whole process study is about – but each of the different cases cannot reveal the same in terms of theoretical concepts. One case may be more revealing in relation to some processes where other cases reveal other processes. The studies of processes here then should *not* be understood as a hypothetic-deductive approach, but as a mixture on deducing information and induction through interaction with others – over time. Yes, the process of studying actors as they

make sense etc. is also an analysis of the *researcher making sense of actors* and how *the researcher tries to create solutions with others* (action research).

The analyses here could for the purpose of arriving at conclusions that might have immediate application in many places, been structured very much. By such a methodology the results will become shallow so as to become more reliable. But as the purpose of this thesis, other than becoming a PhD thesis, is to form new actionable activities in the specific context of access2innovation, the analyses here will not attempt to form conclusions with direct implications for any other context than that of access2innovation and other embedded actors. As such it is *not* the intent of this thesis to have the researcher speak to the data, as it is the intent to let the data speak. The reality of the analyses that are about to be unfolded is that it will become a mixture of both. There are instances where the data is viewed from the perspective of a researcher *looking for certain things* and at other times, data also reveals issues that were not deliberately collected for a certain purpose and therefore can reveal that which was not expected nor foreseen.

But as to allow for a more digestible read, the analyses will attempt to adhere to primarily these concepts:

Sense making: Enactment, Organising, Verbification, Stabilisation and Meshing
Enrolment: Networking, validation and blankness

And the *analyses* that will eventually follow hope to show the *processes* of actors who act and interact to create meaning and eventually solutions.

To prepare the reader it must be stated, again, that to reach an understanding of the context and challenges faced by the actors studied here, "solutions" that actors are seeking are not always technologies or products. Solutions can be anything. Solution relates to any quest; e.g. if one needs a partner, then finding a partner is a solution. Or if one needs specific information, then finding or creating the information is a solution. Creating or finding solutions is a process of interacting with actors (human and non-human), which is true of practice as well as research.

And if research into how to create viable business opportunities in the context of uncertainty has any credence, then actors *should* portray a behaviour of *not* sticking to their initial ideas without validation, but to network, experiment and consider *how* to do business more than to focus on *what* (products/services) to sell.

The analyses then are conducted to sensitise the data in order to learn how actors act. As the context of uncertainty, in theory and in combination with process theory, suggests that enrolment may be difficult when the process of creating solutions have no common point of passage, no beginning or end, then the data becomes the important element. The data will reveal the processes of actors, how or if they "bracket" ideas or concepts, how or if they "bricolage", how or if they ask "What is going on here? and ostensibly "What do I do next?", how or if they enrol others to the cause, how or if the non-human actors influence the processes of creation etc. But the data will arguably be more like capta – that which captivates the researcher, and it will hopefully be data that is comprehensive enough to also captivate other researchers who can then inscribe attributes to the cases.

5.4 This researcher's own process

This section is created to give the reader an understanding of the processes this researcher has been through in a short chronological order, as it has an influence on the data collection, choice of theories and perspectives of this thesis.

The process of researching literature, designing the research for this thesis, collecting data, analysing the data and forming conclusions has been anything but linear.

The initial concept of this thesis was fundamentally changed halfway through the research process, and this new perspective would be more relevant, but made it somewhat more complicated to overview the data and what was needed.

The collected data and the literature used as references changed in context, scope and purpose many times in accordance with increased learning. The initial concept of the thesis was to study actors as they perform certain tasks. But then the actors did not act as was to be expected. And the actors made available to study were not those that were expected either (the cases were that of entrepreneurs and not established businesses). The process of researching actors, in an action research process where the researchers were more consultants than researchers, becomes a process of learning and making solutions on a daily basis. Or in other words, the "ideal" rarely happens, if ever. The processes of engaging actors were always a matter of bricolage; e.g. other than the company SystemTeknik studied here, all other commercial companies embedded in access2innovation were entrepreneurial (although it could be argued that SystemTeknik by entering into new

business domain were in some respects acting entrepreneurial). And the whole access2innovation concept was drawn up as an approach that would hope to enrol established companies – and not only entrepreneurs (for various reasons).

What was becoming very clear is that the preparations made by access2innovation were targeted towards actors (the established companies with a proven track record) that unfortunately did not enter the program. Which in other words meant that the access2innovation facilitators were not prepared to deal with the types of actors that eventually did join the program – the entrepreneurs.

The tool of business model canvas (Osterwalder et al 2010) had been introduced in the processes of creating solutions, but none of the entrepreneurs adopted this paradigm of business. This in turn meant that the study of actors as they create business models became problematic (as has been mentioned). A new line of inquiry ensued: If the business model canvas paradigm did not make sense to the entrepreneurs, then what does make sense to them? Hence the thesis perspective of process, sense making etc. The actors in access2innovation would endeavour to learn what these single entrepreneurs do, in order to become better at organising activities to support these types of actors in the future.

So, the focus of the research had to change, and it changed into a wider study of what actors do in general.

The chronology of events included (but were not limited to) the following:

1. This researcher was enrolled to the PhD position only 6 weeks before the project started
2. So, the theoretical background and state-of-the-art awareness of business model studies was very limited.
3. This researcher then started studying literature related to business models, business models in relation to developing countries, social businesses etc. At the same time the other workers in access2innovation were starting to make plans to talk to NGOs, create partnerships, organise trips to East Africa etc.
4. The knowledge of Development NGOs on behalf of this researcher was very limited indeed and enrolling these into access2innovation was not the perspective of this researcher.
5. The overall role of this action research consultant was to follow the commercial actors that would become partners with access2innovation.

6. There were trips to East Africa in the beginning where the main focus was to facilitate relations and focus on trying to get the partners to co-create solutions (action research consultancy). Field notes for later research were taken in accordance.
7. When returning to Denmark in the first year, engaging the companies to discuss business models etc. revealed that none of them seemed to be interested in the 'business model canvas tool' (Osterwalder et al 2010), which was in the access2innovation toolkit given to companies looking to do business in Africa. From what was evaluated internally by access2innovation staff after reviewing applications made by vying companies to join access2innovation, was that none of the companies were trying to innovate new ways of doing business, but were only focused on selling and maybe innovating products. In other words, it was becoming increasingly difficult to study something about the processes of creating business models, since none of the actors in study, were creating business models – at least as it was imagined by access2innovation staff.
8. At this time data had been collected, e.g. through meetings with partners in access2innovation, contacts in Tanzania and Uganda, NGOs, local businesses, local farmers and other Danish business actors with knowledge of Sub Saharan Africa (see list of interviews in appendices chapter 11). But none of this made any sense. There was still no knowledge about how to do business in Sub-Saharan Africa and subsequently no knowledge about how actors create business models in access2innovation projects.
9. So halfway through the study process the business model approach of the thesis work had to be altered, as the data would have to be over-interpreted to fit with a business model concept of doing business.
10. Something had to change.

An alternate perspective was needed for this research, to allow the data to be viewed in a new light. And in talks (quite many of them) with research supervisors, an interest in *process theory* emerged. Or to put into less academic terms – the new interest was to learn more *generally what it is that companies do*. A more meaningful process of asking: "What is going on here?", led this researcher to investigate other alternatives: "What should we do about it?". The discussions of how to alter to research focus led to bracketing the problem field as something to do with processes in general, about how actors act, how they make sense, create solutions etc.

The state-of-the-art perspective of learning of companies that try to create solutions remained, but a new literature study of process theory and sense making commenced. The decision was to take all the existing data and revisit

it with a new lens or focus (process theory and sense making), and also to supplement this action research collected data with interviews collected ex post. The frustrations of not being able to understand what it is actors do, is of course not scientifically interesting, as it would be a common occurrence in research. But it has been important to unearth what it is access2innovation does as consultants and how that may translate into activities by the companies who are part of the program; i.e. how may access2innovation improve the companies' chances of succeeding in doing business in Sub-Saharan Africa. But since these companies did not behave in expected ways (assumed that companies would join the program in the pursuit of creating business models – and not just trying to sell products), the researcher has chosen to invert the study slightly.

In other words, this researcher has attempted to learn generally what it is that companies do (that are part of the access2innovation program) but also by learning what it is that they do *besides* being part of access2innovation.

In a graphic depiction of what the work was centred on, here is a picture of what was the original idea:

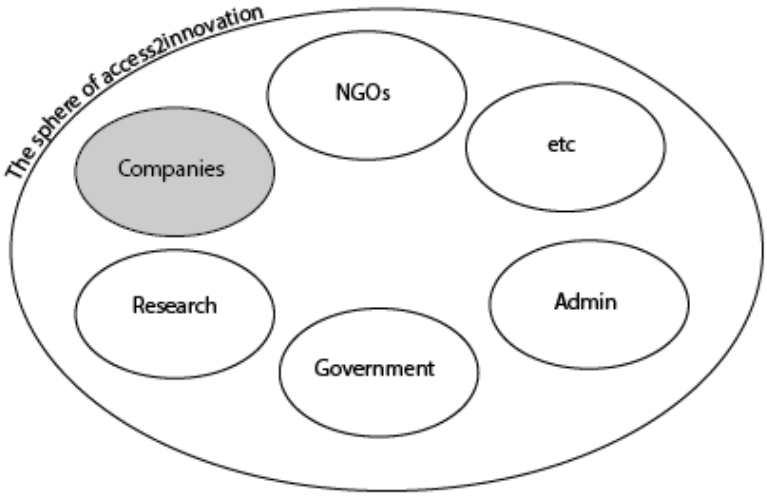


Figure 24: The original thesis focus – the role of companies in access2innovation
Source: Own creation

The objective was originally to study companies in the sphere of all access2innovation activities, and how access2innovation influences companies. For access2innovation to fulfil its purpose other actors take up

crucial parts of the program; e.g. companies are vital to the activities as shown in the above, where companies form substantial part of the whole.

The fallacy is to assume that access2innovation actually does influence external actors like companies, so attention was shifted to look at access2innovation from the companies' perspective. And companies can arguably have completely different perspectives and priorities in relation to the role of actors like access2innovation, such as this imagined picture of a company:

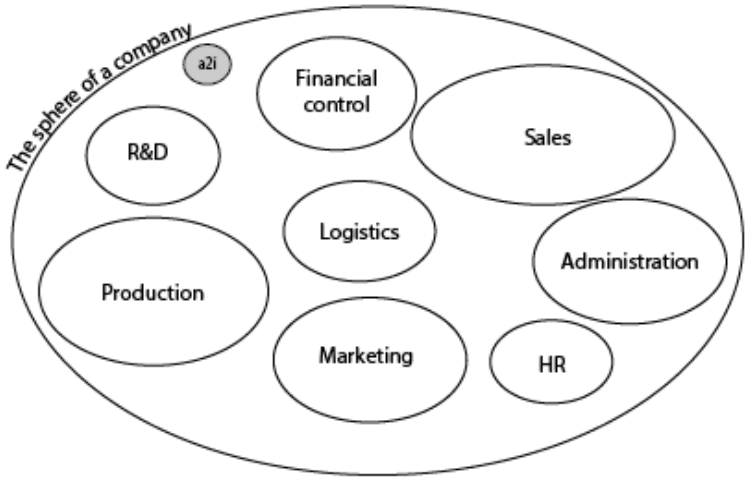


Figure 25: access2innovation from the company's perspective – a conjured example of how different tasks are prioritised differently, where sales is more important than e.g. HR, and everything else might be more important than access2innovation.
Source: Own creation

The efforts of access2innovation may have had little influences on the company (as the imagined figure above aims to show), if any of all the other important activities that take place in companies, and to understand how access2innovation may come to influence companies there is a need to learn more about what the companies are doing, which actors such as access2innovation subsequently will have to suit activities towards – and less on how to make companies suit access2innovation! In plain terms, access2innovation may have to figure out how to become important actors in the activities of companies, more than figuring out how companies can become important actors in access2innovation activities?

In other words, the *relationship* between access2innovation and companies could be skewed. The dependency of each other is not necessarily equal[26]. In access2innovation there is a complete dependency on companies, but companies are maybe not dependent on access2innovation?

Focus of research then was centred on *how to do business in Sub-Saharan Africa*.

So, the important first step in trying to understand actors as they act is to study literature, but this literature can reveal a lot of *concepts* rather than *proof-of-concepts*.

Solving complex social problems in developing countries such as in Sub-Saharan Africa, which must be said has been the governing long-term perspective of this thesis and access2innovation in general, seems to be very context specific, and rarely showed the *processes* of how these solutions came to be. They usually only show what the solutions look like now. This researcher did make an early mistake by being guided by the faulty assumption that someone else at least would be able to bring forward some sort of generic idea and proof that the idea would be valid – or in plain terms – that someone would have figured out *what to do* in the context of Sub Saharan Africa. The research was driven as an action research consultancy to help forge practical solutions and the overwhelming practical problem was: how does one do business in Sub-Saharan Africa?

But a little disconcerted realisation dawned on this researcher when studying process theory: researchers may never really know *what should be done*, but maybe only what *should not be done* (as has been discussed in different ways so far in this thesis).

Now the thesis will return to discussions of the research process made for this thesis.

5.5 The data – in general

The data itself is not uniform in terms of how it is collected. And the challenge is best described by use of the discussion of *data* and *capta*. "Data" in social sciences is discussed by Checkland and Howell in 1998 (referenced by Hernes

[26] This is again an interesting point of research, as mentioned in an earlier footnote – in that actors that work together can have very different motivations for doing so (Alter and Hage 1993)

2008), who argue that data are not solely objective, but *selected* by researchers. And the selection process is not objective per se, but were we (researchers in general) to discuss the information we utilise in research as *capta* we acknowledge that the significance of "the data" is only as good as the researcher who selected this "data". The idea of data, when understood implicitly, becomes an invented relevance, where capta becomes an invented relevance that is made with awareness thereof.

"Process-based research would do well to work with the notion of capta rather than data, because capta remind the writer and the reader that they are subject to selection as well as discovery, and that they are active rather than passive factors of research. They help ensure that we pay attention to how facts come into being; how they are conceived, and in what context. This gives the facts historicity and provides them with a 'passport' for travelling, just like passports do not just contain the name of the traveller, but also other particulars. Capta are in a way living data that take an active part in telling a story rather than merely lying there ready to be pulled out and used. Hence, they take part in shaping the researcher as much as the researcher shapes them." (Hernes 2008, p. 147)

So, process studies themselves are not subject to fact or objective data as the researcher inevitably makes decisions about where to direct his focus, and may also affect the study in doing so. If the social science for this thesis should be considered rigorous then more than a few of the following issues may be relevant to study:

"Actors, goals, intentions, resources, plans, structure, learning, motivation, knowledge, products, technology, services, size, conflict, co-operation, power, intuition, control, money, rewards, rules, routines, procedures, problems, participants, decisions, sharedness, coalitions, tactics, strategy, culture, belief, understanding, sensemaking, consciousness, conscience, norms, relations, influence, change, stability, bureaucracy, documentation, rhetoric, action, behaviour, operations, logistics, boundaries, responsibility, transactions, levels, groups, departments, discourse, networks, trust, communication, roles, materials, concepts, recruitment, novelty, innovation, atmosphere, adaptation, manipulation, opportunism, ethics, moral, dilemmas, play, history, events, rationality, loyalty, chaos, solutions, clans, cliques, groupthink, division of labour, artefacts, vision, slack, sanctions, budgets, process, fashion, renewal, tradition, leadership, management, heroes, gender, profit, reporting, systems, creativity, society, administration, law, economics, symbolism, passion, space, socialization, virtuality, flexibility, rationalization, sex, stress, burnout, expansion, discrimination, narratives, nepotism, technology, outsourcing, projects, actors, aesthetics, time, theories, governance, hypocrisy, centralization, institution, love, responsibility, bankruptcy, entrepreneurship, market,

consultants, specialists, formalization, experience, identity, competition, standardization, confidentiality, politics, legitimacy, superstition, crises, information, class, success, problem solving, historicity, health, rituals, ownership, brand, logo, investments, doctrine, ethnicity, minorities, democracy, harassment, landscape, feelings, joy, hope."
(Hernes 2008, p. 148)

So, collecting data and *choosing* what data to pay attention to, essentially means capta; that which captivates the researcher. And what captivates this researcher may or may not have any significant bearing on anything if the readers of the discussions are not also captivated by it. And this researcher is captivated by, e.g. enrolment, blankness and validation.

The cases studied here are formed through data collected and *created* in situ and mostly ex-post, and regardless of the form of data collection, the researcher will be drawn in different directions for various reasons. The data itself and the ability of the researcher to obtain data influences the case depiction, e.g. a longitudinal study of an entrepreneur over four years versus a case study based on a few interfaces of the course of a week coupled with a single interview of an entrepreneur. But the purpose of this research is not to make comparative studies, but fundamentally to form actionable results, vis-à-vis action research.

The action research based approaches in access2innovation have yielded, sometimes, useless data, sporadic data, but also specifically collected data for analysis, and at the same time instances have yielded data that at times might not be attributed with significance, but only later becomes relevant. Not all interactions that the researcher has experienced with actors who are part of the access2innovation initiative have had direct relevance for this thesis; i.e. there are instances where meetings have taken place for practical reasons and less for research reasons. However, such interactions can have and arguably have had implications for this researcher as all interactions can induce changes in perspectives and behaviours, or as Callon (Callon 1986, Callon et al 2011) would argue; by simply reading the work of others one can be inspired, which then also holds true of any new input. The researcher should then be able to remove oneself from the data so as to learn what took place in a more deliberate fashion. However, when dealing with practical problems, not all interactions with actors become data points – at least not in the heat of things.

- This researcher has been part of access2innovation from 2011-2014, which form the bulk of the data collection (the main data points are referenced in the appendices).

- This data includes over 36 hours of audio-recorded *interactions* with NGOs, governmental people, businesses and other interests with varying perspectives (which are part of the holistic approach of the case study).
- This data also includes interviews with specific interests for this thesis including Danish companies that are already active in terms of doing business with one or markets of Sub Saharan Africa (which include cases that have not been part of access2innovation programs).
- Other data collection has happened through, sometimes coincidental, interactions with partners within the access2innovation program as well as actors that turn up at any given point.
- A large proportion of data collected for this thesis is related to one single entrepreneur Anders, who created the Remote Sanitation Company. This data has been collected and co-created as action research and consists of approximately 200 hours of interactions over the course of nearly three years.
- A set of quantitative data has not been provided or planned for, in part because of the ontological stance of the researcher, but at least because quantitative data in the context of Sub Saharan Africa are fundamentally untrustworthy (as related to the definition of uncertainty for this thesis) and because data collected in access2innovation about the different cases are not significantly interesting in terms of quantification.
- And equally important – to study processes of actors who deal with uncertainty, is to study actors who judge and sense, which are not activities that lend themselves to quantification.
- (a more detailed depiction of the data and how it has been collected etc. will follow shortly)

Other data is made available in access2innovation by other researchers, also part of the program, going back to 2007, which is data primarily collected through interviews with said researchers and practitioners.

Much of the data has no real relevance directly for the cases here, although many of the meetings and data collected throughout the years have not always had any specific bearing on the specific cases, the different encounters with actors from many places and sectors have influenced this researcher consciously as well as sub-consciously, and thereby potentially also influenced the cases selected for this thesis, and also how the data or capta is interpreted.

But there are also data from desktop research, interviews and others, which are referenced where appropriate. In other words, the specific operation of

collecting data for this thesis involves directly linked data where the researcher has consciously sought to look for data to help investigate the research questions, but there is also data which has been collected from other cases which may or may not have influenced how the researcher has conducted the work as a facilitator and ostensibly also affected the role of the researcher. In as much as some of the data may be understood as fuzzy and incoherent and not directly linked to this thesis work, it cannot simply be rejected as irrelevant. What happens in one case, and how the researcher deals with it, may influence how the second case is dealt with etc.

The important aspect of this is that the researcher recognises the limitations of data and also the limitations as to how far the data can be interpreted to suit the analyses, especially as actions as a facilitator and action researcher has first and foremost been to produce practical results, which can then lower the priorities in collecting data for research purposes. The largest amount of data then is not linear or collected by adhering to an overall data collection strategy, and the interrelatedness of data, the influences of the researcher as part of the processes and the outcomes of the processes are quite unstructured.

The data, or rather capta, drawn forward for this thesis then are only those that have some sort of bearing on the discussions, but as the capta definition explains, this is also a limiting method of data collection, as the data presented here are the portions of data through access2innovation interactions with actors, as the researcher finds relevant, and therefore not necessarily all of what has been available.

5.5.1 Selecting cases

The purpose of the thesis is to arrive at a better understanding of the processes of commercial actors, then choosing the cases becomes important.

The three cases taken forward for this thesis have been selected, for these relevant reasons:

- The cases reflect the types of actors and organisations that come through access2innovation, which is to say that what can be learned from them could be useful for future projects in access2innovation.
- The cases are significantly different so as to allow for more nuanced insights into how actors act. Below every case is described regarding how they can contribute to research.
- Essentially the cases represent three different processes of sense making and enrolment.

The cases then are not chosen for their ability nor purpose of a comparative study, but because of their different processes of sense making and enrolment , requires different processes of facilitation on behalf of access2innovation. Nuances that access2innovation facilitators have little knowledge about.

So too are the cases not able to represent the total population of companies that join the program, as the research paradigm of the study is, as mentioned in the theory chapter, more based on phenomenology. As such there are no patterns to be expected from studying one actor to the next, as each actor represents the truth of only that actor. And as a qualitative study, increasing the number of respondents does not increase the probability of truth.

All told, the three cases are by themselves interesting and the findings will help discussions in research, and hopefully leading to yet more research in the future.

The first criterion of interest is that all of the cases have one thing in common – they continue to exist over time. This may seem banal, but there are other cases in access2innovation that emerge but wither away and offer little if any hope of becoming informative for research. To study actors as they act, demands that the actors are durable to some extent to allow for longer perspectives of the actors. And a time perspective is important in order to study processes of actors and such studies require the identification of actants.

The cases here however are principally *not* chosen in a hypothetic-deductive fashion, but primarily because they allow for studies over time.

The primary case of this thesis is Remote Sanitation. Remote Sanitation was initially part of the work of this researcher, and in the earliest parts of the company's life, this researcher was welcomed into the company as part of helping the company move forward; in other words, the case is, from a research perspective, the case based on significantly the most data. As the Remote Sanitation case will reveal, here is a company that has not succeeded in any way, but that is of no concern here. In fact, the failure (or rather 'non-success', as it has not yet failed as such, and therefore not 'withered away' as the expression used earlier in this section) of the company is valuable to inform practice and research alike. And learning what companies do and why they fail, could be important.

The case is of an entrepreneur with a background in catering and later as a sewage and waste technician, who has created new businesses quite successfully, and by creating the Remote Sanitation company has entered into yet another, for the main actor (the founder and only actor of the case:

Anders), new business field. Anders enters into this process of creating business with no context of relations, networks or dominant logic, apart from the access2innovation facilitator who attempts to affect the processes. In other words, the case is interesting as the actor in study is entering into a process of innovation without being limited in terms of being forced or controlled by other actors. Studying how he makes sense of events with no one to guide him (other than the access2innovation facilitator), enrols actors and validates his ideas can provide useful insights. From an action research perspective, this case was not particularly representative for access2innovation projects, as this researcher had the opportunity to affect, act and reflect during many more interactions with the entrepreneur of Remote Sanitation (where the entrepreneur is the only constant – there are no other actors that remain throughout the case), than was usually allowed for. But it is an interesting case as the entrepreneur seemed almost entirely non-responsive to the access2innovation facilitation – even with the many different attempts at influencing activities; e.g. by trying to convince the entrepreneur of a business model approach but failing to do so.

The Sky-Watch case is interesting as it is part of the make-up of access2innovation from the very beginning of the program in 2007, thus allowing for a more comprehensive understanding of how a company develops as well as the role of access2innovation. The case also depicts the processes of working with NGOs, how the access2innovation facilitator is able to enrol actors into a network of relations; a network with relations coming and going. Another motivating factor for choosing this company is that this researcher has had very fortunate access to the company from the beginning and this researcher has been able to follow the company from its birth – not from being part of access2innovation, but because the main actor, Jonas, was a student at the vocational school where this researcher was (and still is) a lecturer. Sky-Watch is a case that reveals interesting processes of sense making and validation through experimentation and also processes of enrolling and networking. To revisit the case in light of process theory, it will be interesting to see how an actor who has had no real commercial experiences, joins a network of other actors and tries to create a solution through partnerships. The case then allows for a study of an actor who has little to go by in terms of own personal experiences, but enters into collaborations with others to develop a new technology. In effect, processes of sense making with others, enrolling actors and validating from the point of a start-up. And especially interesting for this case in relation to this thesis, is that it is a case that ends up focusing on a solution quite different from what was the initial idea; i.e. there have been processes of learning and innovation.

From an action research perspective, this case was part of the access2innovation consultative work from 2007-2011 and predates this Ph.D., and the research was mainly conducted by Ravn (2012) who made exhaustive studies of the action research activities. This researcher however has revisited the company only after the shift in research focus for this thesis had emerged (i.e. after the realisation that companies did not build business models). As such the Sky Watch case is purely retrospective from this researcher's point of view, but that does not detract the value from studying the case as it is quite revealing and can contribute a great deal for future research and access2innovation in general.

SystemTeknik are interesting because they represent the only established company of all the cases in access2innovation, which effectively is the sort of company that was expected to join access2innovation, and also because this company did create solutions that did work in reality and had very good projections of becoming successful. The actors in the case show clear signs of processes of sense making and enrolment, including blankness, experimentations and processes of innovation. It is a case that in some ways becomes a poster example of the ideal type of actor with ideal type of activities as related to access2innovation, and yet it still falls short at the end.

From an action research perspective, the case and the relation to access2innovation might have been understood as a participatory action research process, however, as the company seemed to be able to act on its own the role of access2innovation was almost non-existent. So, it could be argued that the SystemTeknik case data has arisen not from a participatory approach but almost from an anthropological approach.

(A fourth case will be mentioned later in the analyses (WaterBySun) as another example of how there seems to be difficulties in conveying research based findings to actors in the current way of facilitating such knowledge in access2innovation. But the case has not been studied in depth, as data has not been available to any significant degree, but only one realisation made by this researcher is taken into consideration for this thesis)

The findings gathered from the embedded case studies are thought to valuable for the facilitation efforts of access2innovation and potentially other similar initiatives. Then the cases are also interesting in that they reveal challenges in different stages of the companies' lives and own processes. The data then is not collected through a stringent type of action research method, but as the purpose of the thesis is to try and make sense of actors and how these actors make sense, the data utilised for the analyses are chosen because they are revealing and allow to be analysed through theories of process and sense making. And as it is not specifically the interest of this researcher to

compare the cases, it is not found detrimental to the thesis that there are several data collection methods involved.

5.5.2 The specific data collection for this thesis

The cases will at first be revealed in a total prosaic form in the next chapter, without adhering to any particular structure. The cases are in themselves different, as also the data behind them are obtained in different ways. The cases will be delivered as the data allows.

To make a concerted effort of structuring the data for the purpose of this thesis, more deliberate interviews have been conducted ex post to help structure and surmise the cases.

The following is a short rendering of the different data collection methods for each of the cases.

Sky-Watch is a case of an access2innovation initiated effort, and allows for a longitudinal perspective of what different steps the company has made over the years, and how that is linked to access2innovation. To collect data then has primarily been ex post interviews with particularly the then CEO of the company, but also the facilitating researcher from access2innovation who collected his own data (Ph.D. thesis of Ravn 2012 and interview with Ravn 2014).

As such the bulk of the basic descriptions of the Sky-Watch case was gathered through the thesis of Ravn as matter of participatory action research, but the specific interest in sense making and process was investigated deliberately through qualitative interviews with the then CEO of the company (and therefore not action research).

SystemTeknik is an established company and falls within the pre-understanding of what access2innovation would hope to see enrolled to the program. In other words, to study this company is to study an actor that fits with the type of company as was hoped would join the program, and as such some of the data taken forward here are based on action research based data collection methods (the intended perspective of this research and access2innovation), as well as an ex post interview with the then CEO of the company (SystemTeknik 2014).

The basic descriptions of the company and the history of the company has been reached through desk research and during discussions with the company in the beginning of the access2innovation partnership (in 2012),

which was based on a participatory action research approach. Action research based data was however very slim in that the company did not participate in access2innovation activities when this researcher was part of the program, but other access2innovation consultants did continue to work with the company and some of the inspirations and stories of the company's development stem from knowledge sharing. One interaction with a worker from SystemTeknik was recorded later, deliberately for a study of business modelling, and not for process studies of sense making and enrolment.

This case was concluded with an interview with the then CEO at the end of the partnerships (in 2014), however conducted without a process vocabulary in place. The data has since been revisited with a new vocabulary of sense making and enrolment. Yet again, the intent was action research, but the actor in question acted without seemingly needing to do much with access2innovation, thus making it difficult to pinpoint actual plan, execute and reflect processes.

Remote Sanitation is a company that this researcher was linked to for practical reasons. It is the company this researcher first travelled with to East Africa to talk to local stakeholders, but more importantly it is a company defined by an entrepreneur who allowed this researcher to work with him on a weekly basis, and allowed for this researcher to obtain a lot of data, which in turn allowed this researcher to observe patterns of behaviour over time. It was not possible to know at the time if this entrepreneur was going to succeed or not. There were also no assurances that this actor under study would reveal any certain data that would fit into a hypothetic-deductive reasoning. This researcher essentially had an opportunity to follow an actor almost as much as was desired. So, this case is interesting because the data itself is rare, and in hindsight the case is interesting because it is about an actor who acts with no dominant logic, product, technology or other. He is an actor who, theoretically speaking, is not tied to anything and therefore is free to do whatever he wants to. And as will be revealed later, it is strangely enough one of the main arguments as to why he seems to lack the tools or resources to move forward, which in turns says something about how access2innovation has failed in providing this type of actor with the necessary resources to allow him to move forward. All will be revealed eventually.

The company is for the lack of a better expression more about one man than a company, as the different other people involved came and went over time. The entrepreneur is the only constant. The data collected through a participatory action research approach was deliberately collected as a matter, at first, to learn how the facilitation of the business model mind-set would be translated by the entrepreneur. But, as has been mentioned already, the actor

(as well as other access2innovation partner companies) did not adopt this mind-set. A shift in research focus was needed (late 2013), but for the better part of a year a new vocabulary was not in place and data collected through this time was not done so with a deliberate intent, but as a thick case description, or more like the anthropological tradition of action research. An interview was however conducted mid-2014 with the entrepreneur with the deliberate intent of trying to take all the Sub Saharan Africa experiences in review, as seen by the entrepreneur, and to see if any light could be shed on how the actor acts and maybe why. So, the interview was a deliberate attempt at collecting data for a process study, but the vocabulary from sense making et al, was not in place so the interview does not conform to a deductive approach.

In other words, the three different cases are fundamentally interesting for the purpose of informing how access2innovation may become better at supporting different types of actors with different sets of resources, even though the data in large part was not deliberately collected for the purpose of being analysed in terms of sense making and enrolment. One company has succeeded through access2innovation, another is a successful company in its own right and represents the ideal type of an access2innovation partner company and the last company represents an entrepreneur who acts in ways which the facilitators were not prepared for.

5.5.2.1 Remote Sanitation

The data from Remote Sanitation has emerged through an estimated 200 hours of personal intervention opportunities between the researcher (and sometimes other actors) and the entrepreneur Anders, followed by a collative interview between the researcher and Anders (Interview # 22 – see appendices). The work with Remote Sanitation, as mentioned, includes the very earliest processes, also including a trip to Tanzania in 2011 (Field Notes - see appendices).

The collated 200 hours of interactions include:

- Visit to Tanzania (for a week in 2011); visiting NGO partner in Arusha and Dar es Salaam, visiting local professionals in Dar es Salaam, visiting Belgium NGO based in Dar es Salaam, partook in a meeting with different stakeholders in Dar es Salaam, interviewing Danish entrepreneur based in Dar se Salaam, the entrepreneur partook in an access2innovation meeting between this researcher and a local NGO/small business in Tanzania working with small scale windmills and general discussion between the company and researcher during dinners through-out the trip (action research

based consultancy where interactions have primarily been fact finding and exploration)
- As a access2innovation consultant and facilitator the researcher has consulted the company when back in Denmark through business model discussions, hiring of professionals and brain storming (action research based consultancy)
- Conferences with access2innovation workers, the company and the Danish Red Cross (action research based consultancy)

Source criticism
Anders, the entrepreneur and main source of data for this case, has willingly accepted that the researcher become part of the proceedings as a consultant, and through these many interactions a subjective picture emerges of this entrepreneur. The source Anders has in good-hearted fashion shared his findings and concerns openly, however, during an interview at the later stages of the research period, Anders revealed to conform to the findings of other researchers: his memory is very convenient and not particularly accurate. During the interview in question (2014), Anders was confronted by the researcher, and asked to recollect an important meeting in Tanzania, and the respondent remembered it clearly (he said). When pressed on who was present at the meeting, the respondent gave an account that was very much not what actually took place. The researcher had diligently surmised the meeting in Tanzania in a notebook the very same day of the meeting, and had this data to compare to the later accounts of the respondent three years later. Then asking the respondent of how he made sense of things, what moved him to make decisions etc. then is questionable. However, from observing and dealing with, affecting and being affected by the case, the researcher can document very significant findings.

However, as the researcher too becomes a source, a criticism of the researcher is reasonable. At some point a conference between access2innovation workers and this researcher led to an understanding that the other access2innovation workers thought Anders was not up for the job he was setting out to do, but the researcher believed otherwise. As it turns out, the entrepreneur was not and has not yet been able to do what he set out to do, thus putting into question if the researcher has been rigorous in his assertions? But realising that the entrepreneur may have swayed the researcher into considering the entrepreneur as a successful entrepreneur, the researcher began to take more careful notes of proceedings. So I, as the researcher, did not fully acknowledge the challenges of performing action research based consultancy, as the data was very likely tainted by subjective opinions on behalf of the researcher. This however was identified and seized in due time.

5.5.2.2 Sky Watch

The data acquired regarding Sky-Watch comes from thesis by and interview of Ravn (his own thesis 2012, interview 2014), interview with the CEO of Sky-Watch (2014). Additionally, the case of Sky-Watch and the particularly the then CEO Jonas, is on particular interesting for this this researcher, as Jonas studied at the specific education at the vocational school where this researcher was (and still is) teaching. This the Sky-Watch has been followed from the very beginning (albeit not always for research purposes). This in turn allows for communication with Jonas on an informal level, and arguably a less restricted fashion. Jonas worked on his 4th semester as an intern (as part of the educational program) at one of the companies that was enrolled by access2innovation, which is where Jonas heard of the idea that was to be developed. Jonas wrote his project for school about this idea and did his exam. 18 months later Jonas had worked further with what had in his previous project been called 'Eye in The Sky', but had emerged as Sky-Watch – and established company. Jonas made his final thesis about Sky-Watch and this researcher was the examiner. As such, this researcher has quite substantial insights into and access to the company.

Ravn as a source refers to his own thesis work, which was, as this one, primarily action research based, but supplemented, as this one, by qualitative interviews. The reviewed and ostensibly acknowledged report of Ravn has not been put into question here. The interview conducted by this researcher (and one the supervisors of this thesis) in 2013 (see appendices), was organised as follows:

- Qualitative interview with semi-structured questions.
- Arranged to take place at Sky Watch with CEO Jonas Johansen, and the two researchers.
- Expected to take one hour (but took nearly two hours)
- The scope of the interview was designed so as to allow the respondent to give reflections back to the early days of the company until today.
- The questions were explorative in fashion, with strong focus on 'why' the respondent believes the company took one step, and then another etc.
- The questions were also technical in terms of uncovering 'what' the respondent was doing, and ostensibly his perceptions of what he believed that other stakeholders were doing.

There were only few guiding questions posted towards the respondent:

1. Please give an account of the history of the company, how and why it started and onward to today's company.
2. To what extent did the company change over time and why?

3. What is the current business model and how do you do business today?

The respondent's answers guided what questions would be asked next.

Source criticism
The respondent gave inputs and answers that were at times very honest, in the sense that the respondent had no issues with portraying himself as someone who makes mistakes. This leads this researcher to estimate that the respondent is potentially giving the researchers an accurate account of proceedings, as best as he can, without concealing issues or altering the story. However, as respondents in general, as research shows (and indeed has been documented by this researcher in relation to the Remote Sanitation case – see later in section 8.1.), are fundamentally poor at recollecting with any accuracy of prior events, a researcher much endeavour to be humble towards the data and the conclusions that the data will permit. The thesis work of Ravn however helps to validate the findings, as there are no indications that the respondent has altered his views over time, thus elevating the interview to be significantly representative of what has actually taken place in Sky Watch. As a singular source and voice of a whole company the respondent may indeed offer a certain view of proceedings but not necessarily all views or commonly acknowledged views. However, as the purpose of the interview is to obtain an account of the company's history, the decisions that were made etc. the person who has been part of the company since the very beginning and is also privy to the decision-making processes, may be the only viable respondent.

5.5.2.3 SystemTeknik

The legalised entity that emerged from this business case was given the name Remergy (as a conjunction of Renewable and Energy) and was ostensibly its own company, but the main operations came from SystemTeknik and the case will focus on SystemTeknik. But later Remergy will be reintroduced for a specific reason as the main external investor of the company affected the company.

The data is collected in part through the action research phases of access2innovation and also through a collative interview conducted ex-post. The data collected through the action research phases are limited in that the case in question has had very limited dealings with access2innovation, thus limiting the opportunities for interaction. This in itself will prove interesting for the analysis, however in terms of data collection, the primary source is that of the CEO of SystemTeknik, Karsten Pedersen (Interview # 21 - see appendices).

Data points are then:

- Participated in a visit to Tanzania (with two other companies with their own representatives and this researcher) (action research based consultancy where interactions have primarily been fact finding and exploration) (referenced field notes, chapter 11)
- After the trip to Tanzania a session with another worker at SystemTeknik was conducted, on behalf of the worker (action research based consultancy)
- Another trip was organised to Uganda together with the WWF (this researcher was no longer the contact for the company and has only second-hand accounts of action research based proceedings from here on)
- Semi-structured interview with CEO in 2014. (appendices chapter 11)

Source criticism

The primary data point, the CEO of the company and the interview conducted in 2014, was willingly giving the interview. However, the respondent was careful not to make assertions based on speculations and navigated professionally when pressed on different matters. Present during the interview were two other PhD researchers with their own topics to discuss, and as the session was recorded on tape all expressions made verbally have been saved. However, the interview lent itself to unspoken intimacies between in particular this researcher and the respondent, probably due to the familiarity built up during the visit to Tanzania.

The respondent is viewed to have given information in a truthful manor but also with a hint of restraint although that does not seem to have any bearing on the interview.

Other sources of relation to this case come from a newly hired worker at SystemTeknik, who also gave answers that seem to be truthful, but the problem of this source is that he did not have the ability to answer some of the questions related to business models etc. as he was an engineer and had little to no concern about how the business looked like.

All the data then, is not collected in an identical or comparative fashion from case to case, but they give a nuanced picture of the processes of actors as they act, albeit in retrospect for two of the cases.

The action research element of the studies are to some degree relevant as the researcher and facilitator of the projects will have affected the proceedings, and according to interview with the facilitator of access2innovation (Ravn

2014) who facilitated events that led to the formation of Sky Watch there seems to be a similar pattern of behaviour between Sky Watch and Remote Sanitation, leading this researcher to accept that the data and interpretation of the data between the cases can offer valuable insights for both practice and research. The data from SystemTeknik was less in volume but richer in context, and as will be part of the discussions later, one of the reasons for this may be found in the vast experiences of the company already, allowing the respondent to speak more clearly about the company processes.

As has been discussed several times already, the different methods have varying levels of reliability and validity, and as a researcher trying to draw out meaning from the data, it is important that the conclusions do not overreach the data.

But as the purpose of the thesis is to conduct an embedded case study in order to inform a larger discussion of how commercial instruments, such as access2innovation, towards solving complex social problems in places like Sub Saharan Africa can be improved, the data collected, analyses and conclusions will for the most part lead to altering practice in one single context (access2innovation) and less so to inform new theory.

During the research and action of this researcher, other concerns relevant for research have emerged, and will be afforded at the very end of the thesis.

The challenge of researching processes though is to obtain sufficient scientific rigour so as to allow for rigorous conclusions. However, as has hopefully become apparent in the above, the focus on *relevance* over *rigour* for this thesis may indeed not induce a greater affinity to theory development, but it will help spawn a greater realisation of fields of studies worth exploring more extensively. But also help move the work of access2innovation and similar initiatives to a more informed course of action towards solving complex social problems through commercial approaches.

5.6 In summary

The quest to learn how actors create solutions in the context of uncertainty has in part been conducted as action research consultancy work, and in part ex post case study analyses. The analyses are performed as embedded case studies.

The challenge of this research is uncertainty, and following processes of actors who have varying starting points and end points, constellations of

working products, models or other, is then to study processes which are quite substantial to take in. What activities are pertinent? What events should one as a researcher take note of? What are the defining factors to take away from this study?

Fundamentally the theories of process combined with action research and case study allow for a more informed discussion of what companies, which partake in the access2innovation program, are doing. In other words, the vocabulary taken from process theory helps sensitise the already collected data, but process theory also gives advice in terms of *how* to study processes. This advice coincides with the basic premises of action research and case study analyses, as such the thesis is considered to be coherent and valuable to research.

This researcher has been formed by the action research consultancy; i.e. in attempts at creating results, the day-to-day operations are interchangeable foci on access2innovation as an organisation of activities and that of the partners and their organisations of activities. In yet other words, it can be difficult to clearly demarcate where one activity can be said to have been the domain of one organisation or the other, however, this thesis will attempt to view the three embedded cases as only that. Especially as the purpose of the study is to investigate how the actors here make sense of events and how they then organise activities including processes of enrolment of other actors.

6 Case analyses

Chapter abstract:
The main cases of study are each presented and analysed one at a time. The cases are described in a chronological form (i.e. showing the activities has they happen over time) and the instances where activities are able to be discussed in terms of sense making and enrolment, this will take place at the point where it is pertinent.

First the Remote Sanitation case is portrayed and the activities of the actant Anders – and the only actor that remains throughout the case, is that of an actor who makes sense of events as risk, and therefore not as uncertainty. The activities are noun-based and have very little blank enrolment processes and processes of exploration and experimentation. A possible explanation of this behaviour is attempted in that the actor has no relations to form the agenda or processes.

Second is the case of Sky-Watch, which is about an entrepreneur who takes a leading role in a network of actors who attempt to build a remote-controlled helicopter to be used in mine clearing in places like Angola. The processes this actor and the company go through are processes of innovation and experiments, with significant adding and subtraction of actors over time.

Third is the case of SystemTeknik, which is an established medium sized company with decades of experience in infrastructure electrical devices and solutions. They seek opportunities in renewable energy, of which they have very limited experiences. The processes this company goes through are also that of innovation and experimentation, with adding and subtracting of actors over time. This case also gives evidence to the importance of the role of funding.

The cases are shortly summarised and a deeper discussion of the findings follow in the chapter after (chapter 7).

The different cases represent different companies with varying levels of success and experiences. And also, the cases are depicted based on data in varying scale and scope as mentioned earlier (see section 5.5).

The data behind the cases have been discussed in the previous chapter, and references to the different data points can be found in the Appendices (Chapter 11).

The structure of the case depictions is not uniform as each case has different development backgrounds and ideas, and they are also based on varying volume and types of data.

6.1 Remote Sanitation (aka Aquaplaning)

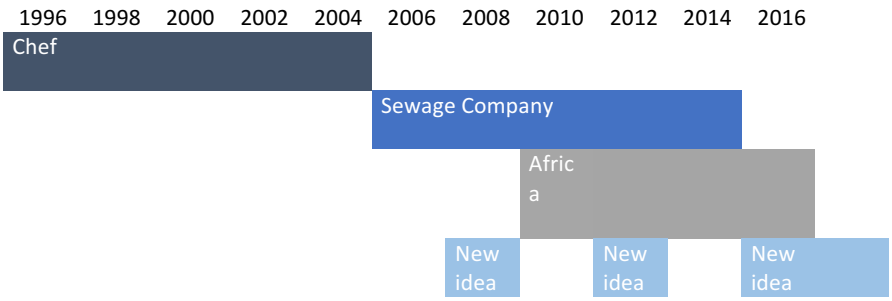
The case in short:
This is a case of a multiple entrepreneur, who has worked in Denmark and quite successfully built and sold two very different types of businesses (catering and later sewage technician). His personal interest in creating solutions in Africa was spawned during a tourist trip to Tanzania, where he observed something he thought he might do something about – and maybe even earn some money doing it. He contacted access2innovation and tried to gain particularly financial support for his ideas. The case shows an entrepreneur who is hindered somehow in getting through with his ideas, and the case analyses will reveal how the total freedom of this entrepreneur to indulge in any venture, is not a benefit for the entrepreneur.

The case of Remote Sanitation (originally called Aquaplaning – the name changed at some point) followed the following sequence of events. The case depiction is centred on one person, Anders. Anders has been a self-employed entrepreneur and is familiar and experienced with creating commercial solutions.

This case depiction is by nature of its relevance for this thesis centred on activities related to the projects with access2innovation, but to provide a more detailed account of the activities it cannot be ignored that the subject (Anders) is also involved in other projects at the same time. And these projects have an equal amount of importance in the pursuit of understanding of what the actor does, and in this case maybe also reasons why he might be failing.

6.1.1 An introduction to the entrepreneur

The following image illustrates the timeline of interest for this case:



Timeline 1: Remote Sanitation aka AquaPlanning

The illustration shows the different activities over the years of the entrepreneur in this case. The access2innovation partnership was created around 2011, but the processes of the entrepreneur in question has been made to also include a few historical events prior to this, as this may lend some insight into who the entrepreneur is.

The company Aquaplaning (what would later become Remote Sanitation – or what is just been coined 'Africa' in the timeline – and the point in time where this researcher first encounters the actor), was started by the entrepreneur Anders.

Anders also had a main operational business within sewage management, which was a full-time business with up to six employees, but he was also considering a third idea about craftsmen service (an information technology based product or service – what is the 'New idea' in the timeline). When the entrepreneur, henceforth just called Anders, entered into access2innovation he had a holding company with these interests.

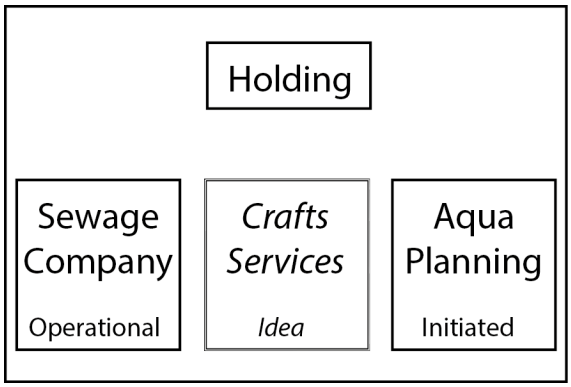


Figure 26: The different interests of the entrepreneur
Source: Data interpreted by this researcher

Looking back to the timeline before Anders met with access2innovation for the first time, there are a few points to take notice of.

Anders was originally a trained chef (coined 'Chef' in the timeline above) and operated his own restaurant and diner transportable for about 8 years. Looking to a new business opportunity he had considered a craftsman profession such as a carpenter, but as a family member invited him to an introduction meeting about sewage and waste he thought to have a look at it. It caught his interest, so he endured a training program and became a professional sewage and waste operator as a craftsman and quickly started his own company. His idea was to create a unique concept within the craftsmen trade where he would supply much needed administrative assistance to the sector, as he believed that the industry actors (the craftsmen) were good at their primary job but were struggling with the operational and administrative jobs of keeping a company. That sewage company was called 'Aalborg Kloak og Entreprenørfirma' (where 'Aalborg' is the city name, 'Kloak' is sewage, and 'Entreprenør' is another word Building company or General Contractor).

But getting the company to work as he intended was made difficult due to the financial crisis of 2008 and forward, and he ended up with a sewage company not that different from competitors in the market. The decision to do a regular type craftsmen company was purely out of survival, as his original idea did not fit a sector, he believed, lacked growth and economic prosperity (Interview #22, see appendices). However, the idea of creating a unique service still lingered, which was something he might pick up again at a more opportune moment.

He employed at the most around 4-6 people at any given time in the course of the 7 years he was part of that particular industry (sewage company).

6.1.2 Emerging interests in emerging markets

When operating this business, he had visited Tanzania twice primarily for private purposes (the following was note during first meeting with access2innovation in 2011, field notes). He amongst other things had wanted to climb Mount Kilimanjaro. During one of the visits there he had *noticed* that the water and sanitation of private homes of Tanzanians in rural areas were appalling and at times he was confounded by the, to him, illogical setups of where fresh water was gathered and where waste water was thrown out; something to do with cross contamination. He mentioned to this researcher that he considered it strange that such problems persisted when solutions were easily found. Fundamentally, he thought that he might actually be able to do something about it, and maybe even make a business of it. When returning home, he pondered the idea of at least making fresh water more available, and subsequently considered that he had *not noticed* rainwater collection devices during his first visits. So, his first project was to consider rainwater collection (bracketing).

Aquaplaning was then created in 2011 with the help of local ('local' as in his own home town in Denmark – not in Africa) business incubator, and Anders hired an employee to help build this business, whilst Anders himself still kept his primary sewage business in operation.

Anders had in other words come to believe (noticed) that he would not be able to create the business alone and at the same time have another full-scale business to look after. Therefore, he perceived the solution to the problem of not being able to do everything himself, is to create a separate company and hire somebody (enrolling) to help him (bracketing).

The person he had hired, called Torben, Anders knew beforehand from a previous business project and had great expectations of him. He had hired him on a government allowance deal as Torben at the time was out of work, so with a grant from the Danish government Torben was hired for a 6-month probation period with a possibility of extension into a fulltime job. Essentially Anders only had to pay half of the salary for Torben for the duration of 6 months.

In a process perspective, Anders had *noticed* a problem of not having enough resources to lift the task himself, and then *bracketed* the problem as being a matter of 'hiring more time' (a quantitative measure) and to do so with less

expenses than hiring a new employee at full wage, and not particularly hire someone who was best suited (a qualitative judgment). Furthermore, the hiring of Torben was bricolage, in the sense that Torben was in a position where his skills could be obtained for half the price, Torben was known to Anders (in his existing network of relations) and Torben made sense to Anders as Torben would be able to contribute to the project. In yet other words, the processes of enrolling Torben were not processes of trying to reach ideals – Torben was probably (but not investigated at the time) chosen because he was available. In interpretation Anders could be argued as being interested in *having a hired person* (a noun based actor), rather than the *process* of hiring (the verb based actor). Or crudely, as it seems the goal was given (Torben was going to be hired) there was no need to consider the means of hiring (the process). The decision to act was performed impromptu, or what could be considered the opposite of surveying and weighing options. In yet other words, Anders had considered his primary business as something that could and probably would take up most of his time. Thus, a need to hire someone was needed. But funding is very limited and therefore a cheaper solution would have to be found. A contact from a previous project had made himself known and was willing to work for 6 months with part of his pay coming from the government. The combination of lower costs and that Anders knew Torben made some sort of sense. In all, the noun based actors seem to govern the sense making process of Anders.

Torben as his first assignment had surveyed what options there were for enrolling any support or funding to help the business Aquaplaning come to fruition (also relayed during first meeting with access2innovation in 2011), and one of the Danish Governments Regional offices, which he contacted, pointed to the access2innovation initiative. A meeting was setup so that the firm could learn of the access2innovation initiative, and vice-versa.

Torben in other words, on behalf of the company, went outside of the company to seek assistance, in order to *enrol* external help and funding. Torben is not the focus of this study, but Torben incidentally portrayed the sort behaviour that was expected to be seen in access2innovation; i.e. enrolling others to help in the process of creating solutions.

The meeting between the company and access2innovation took place at the North Denmark EU-offices in mid 2011 and during the meeting Torben and Anders were shown the way access2innovation cases worked and how that might be a little different than what they expected; i.e. access2innovation researchers would usually first make partnerships with a local NGO, who would help draw out some needs that were unmet. These needs would be taken home to Denmark and offered to businesses as opportunities. The staffs of access2innovation were essentially *pulling* actors into a new market.

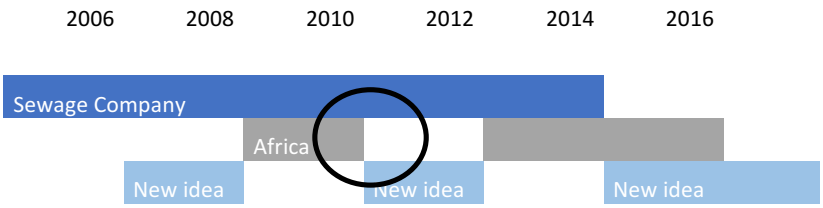
Aquaplaning with Torben and Anders were on the other hand considering a specific technology for a specific market and wanted help to get there, including any funding available, i.e. they were *pushing* an idea to a new market. But as it turned out, the access2innovation project in relation to the NGO called MS ActionAid (at the time it was only called MS, but had since merged with ActionAid) with a training facility in Arusha, Tanzania, had already come up with some *water challenges*; challenges that were linked to high energy consumption rather than a decidedly lack of water, but it was thought (noticing) on behalf of Aquaplaning and access2innovation that there *might* be a fit between what the NGO wanted and what the firm wanted (bracketing) – or rather that their areas of interest seemed to be linked in some way.

The idea was not in principle compatible with that of the company, but as a part leniency on part of access2innovation and part creative thinking, the company was acknowledged as a fit for one of the access2innovation projects and would receive assistance (NOTE: applying companies would at times not fall within the mandate of the access2innovation program, but was not too distant from it either. And since there had not been many applications from which to choose the best, the access2innovation workers would bend or loosen the requirements for entering the program, and as such the majority of companies that did make up the field of companies were not those that was hoped for).

So, a visit to Tanzania was planned, not because the technological aspects were in alignment between what the company wanted to deliver and what the NGO wanted, but as two potential partners who have same basic interests. From that it was hoped that a new pathway could be created for further exploration.

In a process perspective, it was access2innovation who was the main driver of getting the actors together. The quasi-object (the object around which other actors would converge) was in many respects artificially created by access2innovation in that attempts were made to create a common point of passage of what the NGO needed, and what the company could deliver. This is most evident in the processes where neither the entrepreneur nor the NGO were deliberately trying to see how they could help one another – it took the efforts of access2innovation to create a vision of sorts, for the two actors to agree to meet. In yet other words, from the perspective of both the firm and MS ActionAid the coming together of those two did not by themselves make sense, and they were not deliberately trying to enrol each other, which essentially meant that access2innovation would have to find some creative way of showing where these two actors had common interests.

The firm and access2innovation went about arranging a visit to the training centre in Tanzania in 2011 (called MS TCDC, Mellemfolkeligt Samvirke Training Centre for Development Cooperation), from here on called TCDC[27].



Timeline 2: Remote Sanitation aka AquaPlanning

Note that the entrepreneur was, at the same time in 2011, operating a Sewage Company full time, and was also working on a New Idea (the concept of making some electronic craftsmen documentation device – not for Africa) (Note also here that for sake of overview, the experience of being a Chef has been removed from the image).

TCDC is a Danish initiative with decades of operations and a Dane managed that particular centre, which made a good case for the access2innovation development program as a Danish national would at least speak the same language as the companies and entrepreneurs, thus help mitigate any language misconceptions.

The trip included one researcher (this researcher) from access2innovation and the two, Anders and Torben from the firm. The program was fundamentally laid out with the following provisions and objectives:

- access2innovation had not yet conducted such a trip with company representatives and there were no ex post experiences to draw from in order to organise it
- however, the purpose was to allow the access2innovation partner at TCDC to gain access to new solutions by the inclusion of commercial businesses

[27] The Training Centre for Development Cooperation (TCDC), as has been mentioned earlier, is an originally Danish Government funded school placed in eight different locations around the World, designed to train NGO personnel in local useful skills; e.g. Language, Pastoralism etc. The centre provides housing, food, wifi etc. for the course attendees. Attendees pay to take the courses and the centre gets grants from the Danish Government to run the facility, which in total make up all the budget of the centres.

- and companies should experience a new market opportunity by meeting potential customers face to face and gain new inspirations for new opportunities.

That was principally the idea behind the organised visit on behest of access2innovation. Anders and Torben had already planned to go to Tanzania on their own as an old Danish contact, who worked in the city of Mwanza, had drawn them there to look at clean water issues.

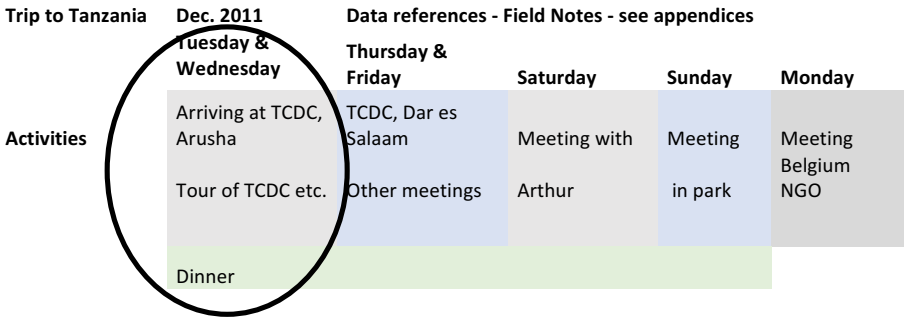
The processes that led to Anders and his co-worker to go to Tanzania had been planned before any of them had heard about access2innovation (and the process behind this is not known or researched). And choosing to go to Mwanza, Tanzania, is in a process perspective a matter of the actor Anders, again, linking his activities close to a contact of which he was familiar. In this case, a woman he had once met, and by coincidence had a talk with years later in 2011. This talk led Anders to the decision that he should visit Mwanza and his contact. According to a small recollection made by Anders of the talk with this contact (unfortunately not committed to this researcher's records until much later as the information at the time did not seem pertinent), a water problem was indeed identified (noticed) and that there might be an opportunity to look into rain water collection as a solution (bracketing). To Anders his activity of speaking with a known person, who does either encourage him or at least does not discourage him, is enough for Anders to take a step further. It seems more important that Anders *knows the person* than *qualifying* if that person in fact knows what he or she speaks about. It could be defined as an act of trust, which is the opposite of the facilitation of access2innovation purports, which is to investigate and analyse methodically prior to taking active steps.

Anders then was sufficiently comfortable to allow this contact to become a beacon of knowledge or sorts, even though this contact, as it turned out, had nothing to do with water or water solutions. She only lived there and had her own experiences with poor water quality, as a resident and consumer of water. In a process perspective Anders' relations with the contact was a matter of validation, but not a qualitative or critical validation. For Anders, it was enough that there was one available source of information that could corroborate his initial idea, which seems to have lead Anders to act. It would seem that Anders was looking for something specific, and this actor had given him what he was looking for, leading him to take further steps.

An actant may be emerging that Anders trusts those he knows almost unequivocally, which may inform his process of sense making. Anders is enrolling actors, in both cases knowledge or capabilities, which he does not second guess.

So, the combined trip meant that the firm would travel on their own accord to Tanzania and at a predetermined date meet with this researcher at TCDC in the region of Arusha. The firm was also offered to join the researcher to the biggest city of Tanzania, Dar es Salaam, to meet up with the general manager of MS' training centres across the globe (of which there are eight).

Furthermore, the firm was advised, before going to Tanzania, to make the most out of the trip and to fill out their schedule as much as they can as airfares are not cheap and one might as well make the most of it.



Timeline 3: Remote Sanitation aka AquaPlanning

Note: this are the activities over the week during the stay in Tanzania. The entry of 'Dinner' took place every night between the two from the firm and the researcher, and allowed to sum up the day's events and share thoughts and ideas.

Prior to arriving at TCDC the entrepreneur had experienced in Mwanza that children were taught that it was not allowed to drink rainwater, as water collected from rooftops would carry along bird droppings etc. thus polluting the water! Anders felt not entirely sure how people at TCDC perceived rainwater (Expressed during dinner session on Tuesday, the first evening - Field notes).

The following day (Wednesday, the firm and TCDC people met for the first time – Field notes). TCDC did consider the idea of rainwater collection but found the troubling amount of storage needed to save clean drinking water in the amount that was needed (400 litres per day), and the challenge of keeping it clean big issues (as rain does not come all the time, in fact, only in two seasons over the course of a year). In fact, too big to consider it any further.

So, the rainwater collection business idea and the TCDC seemed *not* to be a good match.

A process of validation of the potential in rainwater collection between the firm and TCDC, which required a meeting that took around 1 hour, and in hindsight could have been investigated without leaving Denmark. The actor Anders and his colleague Torben had travelled across the Equator to learn of opportunities in Tanzania, which makes sense to Anders, maybe as he might be familiar with seeing things with his own eyes what is happening and his decision-making process requires first-hand experiences. Maybe it is a process of a craftsman where something breaks, then you need to go out at see what is broken in order to fix it. The same sort of sense making seems to happen here too (as seen from the present access2innovation researcher, this process was *not* interesting at the time, only much later when the thesis had shifted focus).

The processes of sense making here were matters of trying to come to terms with what was happening, what could be done about it and finally discarding the idea. And interestingly the main argument about why rainwater collection was *perceived* to be not such a good idea, is that it would be difficult to collect the amount of rainwater needed and to keep it clean whilst being stored. But none of the involved actors externally validated this; maybe they simply concluded that since none of them held a solution for the storage problem, then it was reasonable to think that no one else would? This question was not answered, but it was clear that the processes of external validation did *not* take place. At no point was there a need to enrol others to resolve the issue!

What did take place is that between them they reached a sort of agreement that, since none of them had heard about a solution for storing large amounts of clean water in a place like Tanzania, then the solution simply does not exist. A process of validation one could say, but only between two actors who could arguably be said to have very limited knowledge about that which is discussed.

In interpretation; how Anders makes sense of what he is presented with seems to take on a certain power. More than once so far has Anders been presented with an actor whom Anders chooses to trust, and whatever is shared is deemed the end of it. Case closed, so to speak. It may seem crude, but the process of Anders and how he seems to make business does seem crude (and the following stories are made up and exaggerated).
Anders could be accused of saying:

- I need to hire somebody to help me. Hi Torben, how are you doing? Oh, you are looking for job, and you have a government grant with you? Yes, you will do.
- Hi Anna, long time no see. Oh, you live in Mwanza now? Interestingly, I was thinking of Tanzania the other day and the poor water and sanitation I saw there. Why are people not collecting rainwater? Oh, you think it might be a good idea? Great I will come visit.
- Hello TCDC, I have an idea about rainwater collection. Oh, so you think it is not possible to store vast amount of rainwater for longer periods without contamination issues? Well then that's too bad – I'll drop the idea.

Pardon the jargon and improper language not befitting a PhD thesis, however, it does seem helpful in showing the process of Anders. There is a very large trust in the source of knowledge, which in itself is not a bad thing, only that it isn't the sort of activity suggested by literature or indeed access2innovation. Anders *should* enrol different knowledge from different angles (actors) to investigate if his idea could be possible or not. Hiring someone to do the specific job, with whatever that entails could suggest hiring someone with certain skills. but Torben was available (bricolage), was familiar to Anders and could *most likely* do what was needed. Anna in Mwanza might be a nice and trusting person, but what would she know about making a business out of rainwater collection? And what does the TCDC know about storing rainwater? This researcher cannot answer these questions, but to Anders it seems to make sense to him that those in front of him to whom he poses a question, and then answers that question, seems to be the all he needs to know. Maybe it is a throwback to his previous business life of catering and sewage technician where it could be argued that outstanding questions would have natural actors to whom they could be asked, and ostensibly the answers given would most likely suffice. In other words, there has maybe not been a need for a second opinion in Anders previous business life? It would seem that Anders translates events by use of a vocabulary he is not willing to question – his existing vocabulary.

Note: As the reader may have noticed, the processes of sense making and enrolment are interlinked and not easily demarcated. It is also difficult to dissect what some other actor than the one under study is doing, as it can influence the actor under study. The processes for instance between Anders and TCDC when discussing rainwater collection could arguably have been different if TCDC would interject that indeed they had no knowledge of rainwater collection on a big scale, but they would investigate it further by searching the internet, ask around in town and maybe some NGO colleagues to hear if anyone

has heard of such a solution. But, and this was observed by this researcher, they did not. They too could have been characterised, as Anders, as finding it sufficient that Anders had never heard of a rainwater collection container before, even though Anders really had no way of knowing, and then leaving it at that. In other words, the study of the processes of an actor, is in fact studies of processes and sense making of actors. A sense making and enrolment study with focus on NGOs seems pertinent.

6.1.3 Changing perspectives

This researcher then conferred with Anders, about other things happening at the centre, which might be inspirational to him.

At the TCDC centre in Arusha still during the same trip in 2011, the firm was given a tour around the complex to see what else was going on there, and not necessarily just about water issues – i.e. processes of exploration at the behest of the access2innovation facilitator. One of the innovations at TCDC was created by a local Tanzanian called David (who incidentally had taken a PhD from a Danish university). The solution was to take care of grey wastewater (shower and kitchen water essentially) by the use of open pits and solar energy to convert the dirty water into clean water. These open pools were quite successful and of course informed especially Anders about something he had not seen nor considered to be a talking point when visiting Tanzania, but it was something that was more familiar to him as he is a sewage and waste professional. The grey water treatment apparently could create clean water – even cleaner than that which was already in the small river into which this cleaned up waste water would flow, but there were challenges at the centre in that it was not in a big enough quantity to merit exploiting this cleaned water, and also that there were psychological/cultural complications when trying to convince locals to drink cleaned waste water.

This experience did not lead to anything at this time.

Anders and Torben held a few other meetings whilst still in Arusha (without this researcher), but nothing came of it, according to Anders, and as the researcher did not join all of these meetings, this researcher can only accept his word for it.

6.1.4 Going to Dar es Salaam

During the same trip in 2011, in Dar es Salaam, which is the largest city and the main trading port of Tanzania, the firm had scheduled own meetings, as did the researcher.

Trip to Tanzania	Dec. 2011 Tuesday & Wednesday	Thursday & Friday	Saturday	Sunday	Monday
Activities	Arriving at TCDC, Arusha Tour of TCDC etc	TCDC, Dar es Salaam Other meetings	Meeting with Arthur	Meeting in park	Meeting Belgium NGO
	Dinner				

Timeline 4: Remote Sanitation aka AquaPlanning

The meeting together with the manager of all MS' training centres, Peter, was a more political meeting to assure some level of cooperation if solutions were found to work at the centre in Arusha, that there would be opportunities to explore other of MS' centres around the world, as mentioned earlier. So, Aquaplaning were given an opportunity to develop and test solutions at the centre in Arusha and the centre in Dar es Salaam. MS then were trying to enrol the company into creating prototypes and to test them at the MS facilities.

Interestingly, when Anders relayed the story of children being taught, in Mwanza, that rainwater was not drinkable, the manager said that that is not a problem for people of Dar es Salaam. Apparently, there are cultural differences in how a certain technology is perceived by locals! Rain water in Mwanza becomes amongst other things, contaminated easily because of the bedrock beneath the city, which has poor run off and sewage lines, which in turn creates flooding and cross contamination. But in Dar es Salaam it is a different story. Then the process of observing "What is going on here?" to "What do I do about it?", is for Anders becoming a source of frustration. He had been willing to kill his own idea of rain water collection based on singular findings in one location (Mwanza) and when rain water collection did not seem to be useful in a context of a bigger facility (Arusha and the training centre there) this new piece of information that rain water collection might actually work in Dar es Salaam did not motivate Anders to investigate it further. His own processes of validation lead him to stop working with the idea. He did *not* however try to validate this with other sources, sources that

might otherwise be more authoritative on the matter. He simply accepted the word of one individual on the matter, much like he did when speaking with his contact in Mwanza and indeed at the TCDC.

One other thing became clear to the firm from talking to the MS manager: other rainwater collection devices already existed and the profitability of it was questionable.

In a process perspective Anders had noticed and subsequently validated for himself, that in the places *he* had visited in Tanzania, rainwater collection was not used, and from this he had surmised that such solutions were not available. The sense making here could be said to that of an entrepreneur seeing an opportunity to make a business in something others had not. He had organised his efforts in Denmark such that when he did go to Tanzania he would find corroborating evidence that his rainwater collection idea might actually work. But Anders had, by going to Tanzania, collected evidence showing him that it was not a simple idea because of cultural differences and various types of needs in terms of rainwater, and that solutions already existed, that to him meant that his rainwater collection idea was not viable. In retrospect, it could be argued that since rainwater collection was not always observable, it was not because of the lack of devices (noun based actors) to do so, but because of challenges in disseminating (verb based actor) such devices profitably.

In a business model mind-set Anders could have found these answers by studying the problems sitting at home in Denmark searching on a computer. He would have been able to spare himself significant resources had he investigated these issues.

6.1.5 Changing perspectives again

The firm started to consider alternative opportunities whilst still in Tanzania (and still during the same trip in 2011) and during the daily dinners (Field notes) between this researcher and the two from the firm, new questions were unearthed that needed to be answered. Maybe opportunities persisted that are more closely related to solutions than Anders was already familiar with, i.e. sewage and waste rather than clean water technologies? Maybe something that was potentially profitable, but something that Anders already had some sort of context to validate from? The activities of posing such new questions was instigated by the facilitator, not the firm.

One idea occurred during one dinner that maybe the Ministry for Water and Sanitation in Tanzania should be contacted, as well as local municipality. This

sense making process could be argued to follow a known path from home, in that Anders had dealings with his own municipality in Denmark when trying to find opportunities in sewage operations.

Maybe there are practitioners with the same interest as Anders' home sewage company, but who did not have the same technology as he did at home? This idea was forwarded by the facilitator, not the firm.

The three actors (Anders, Torben and this researcher) spent time looking into different actors who could be contacted, whilst staying in Dar es Salaam. The Ministry was contacted to make meeting arrangements, but to no avail. Anders found another company with Danish affiliation whom he went to meet (without this researcher), and came home with a sense of having gained a potential partner in some uncertain future. A little frustration was creeping in as Anders was becoming less convinced that he had anything that would be an interesting and profitable business opportunity in Tanzania. What had made sense to Anders prior to going to Tanzania had proven to be unviable in every situation. Now whilst staying in Dar es Salaam the activities he had conducted so far seems to have exhausted his ideas. And it also dawned on him that he had employed Torben maybe as a bad fit for his ideas, which in itself is a sort of validation. Or in retrospect, since the ideas now were validated (to a satisfactory level for Anders) and found unworthy, the skills of Torben were no longer in alignment with what Anders had envisioned.

On the following Monday the two, Anders and Torben, were to leave Tanzania, and as the week had yielded more questions than answers, Anders was a bit uncertain about what to do next. He in other words could not find something sensible to do, which he said explicitly (Field Notes).

On Friday evening, three days before they were planning to leave, the company and this researcher discussed the different issues and opportunities over dinner. No meetings were planned for the following Saturday and nothing really was planned until the firm had to leave on the coming Monday. So, Anders was invited to join into a access2innovation meeting; a meeting with a local small scale windmill producer. A meeting planned primarily to make the most use of the time there (for the sake of building networks for access2innovation and not for the particular purpose of Anders' business).

The discussion leading to inviting Anders to the meeting is relevant to divulge here. It was loose and unstructured but also based on a previous discussion: the discussion of what *sort of interactions* Anders was having with the people he met. Anders said during one of the evening meals that he felt comfortable only when making commercial deals with people – vis-à-vis transactions. He expressly said: "I cannot do small talk". He said explicitly that he neither saw

the benefit of small talk nor that he had the skill to do it. Returning to the invitation to join in on a meeting on that Saturday; Anders was offered by this researcher to join in on this meeting, primarily because Anders had nothing better to do, and secondly because, as this sentiment was shared with Anders: "you never know what might happen when you meet people outside of your own interests" (an approach to innovation and creating solutions that was repeated by this researcher towards Anders throughout all the years of study). Anders elected to join the meeting, and as far as could be assessed, not for the reasons provided (that one might learn something new), but simply because Anders did not want to sit in the hotel and do nothing. However, the sense making process of Anders that led him to join the meeting, did not clearly seem to have something to with the purpose of the meeting.

The meeting on this particular Saturday was only arranged during the same week (and not before leaving Denmark), and was about an NGO soon-to-be business venture, looking to turn their small-scale windmill social project into a business. This was interesting to this researcher as it in some sense spoke of the access2innovation initiative's agenda (renewable energy), and as an action research consultant, this researcher thought this an opportunity to expand the access2innovation network and increase the opportunity to share and disseminate knowledge. The meeting was scheduled to take an hour and it took place in an office in Dar es Salaam.

6.1.6 Meeting outside field of interest

The meeting would for Anders become a matter of talking to someone who was outside his own field of interest, but as mentioned it was not clear why Anders wanted to join the meeting.

Trip to Tanzania	Dec. 2011				
	Tuesday & Wednesday	Thursday & Friday	Saturday	Sunday	Monday
Activities	Arriving at TCDC, Arusha Tour of TCDC etc.	TCDC, Dar es Salaam Other meetings	Meeting with Arthur	Meeting in park	Meeting Belgium NGO
	Dinner				

Timeline 5: Remote Sanitation aka AquaPlanning

The meeting unfolded as it was intended; i.e. a deliberation of the small-scale windmill project between Arthur and this access2innovation representative.

When the meeting was concluded, it became clear to this researcher that Anders had not uttered a word during the meeting, and so as not to risk his story not being told, this researcher reintroduced Anders to Arthur, and relayed Anders' main interests in general terms. The following conversation ensued, word for word as best as can be recollected (the meeting was not recorded):

The researcher: "… so Anders would like to explore opportunities within sewage and waste…"
Arthur: "Well, you should really try to get a meeting with the Ministry for Water!".
The researcher: "Yes we should, and we have tried, but have not succeeded in getting a meeting".
Arthur: "Do not worry about it. My brother works there, so I will contact him for you".

In other words, the meeting we had ourselves tried to get with the Ministry, suddenly became significantly more probable through meeting someone who none of us could have imagined would provide this opportunity. We had unintentionally enrolled a seemingly non-relevant actor into the mix and this actor provided useful help.

Subjectively speaking it seemed that Anders had not really understood what had just happened during this meeting with Arthur. He actually went away from the meeting speaking in Danish, reiterating the question verbally "What just happened there?". It could be interpreted as a question that despite being subjected to the idea that meeting people outside one's immediate field of interest might provide new ideas or opportunities; Anders had not believed or recognised these inputs from the researcher. The sense making process of Anders then could be termed a "rational causality link", e.g. if one would like to learn of something specific, for instance how well the sewage system of a city works, then you contact the office in charge. If you fail at that then you have exhausted your options. The process of innovation however includes processes of networking, and networking apparently also outside the immediate causal interests. Again, Anders could be said to have continued on a path familiar to him, and which has not failed previously – go to the source thought to be the right source; if able to have a meeting, whatever that source says, is true. If actors are not able to have a meeting, then that's that.

Another way to characterise the activities of Anders is to view his actions in terms of *idea generation*. And the following is a reflection back to the time before Anders met with access2innovation for the first time.

It could be argued that his previous work as a chef and indeed as a sanitation technician did include idea generation processes. The catering he had envisioned was to take an existing approach to catering and twisting it a little. Catering is a proven concept in that it exists, has existed for a long time and there are customers for it. Figuring out if it would work or not contains a host of interesting and important issues, but most of them are facts; there is definitely food, there is definitely something with what type of food is useful to make in large quantities, and the unanswered questions would evolve from such a set of given criteria. In sewage and waste, there are similar given criteria from which to develop a new business. But when going to Tanzania there are no given criteria but Anders' sense making process suggests that he himself has *defined* what must be given criteria. He has previously been able to validate his business model by enacting in a world primarily consisting of criteria that were not up for discussion – *criteria that were externally defined by other actors*, and the process of validation may have been rather simple, e.g. either the customer was happy or not. Or maybe the municipality would agree upon the plan of improving some sewage work, or not. The actors that have influenced Anders' have been relatively well known, it would seem, and the processes of enrolling them and validating ideas could be surmountable. And Anders' sense making process in relation to Tanzania seems to be a continuation of that.

Conversations ensued between this researcher and Anders that sometimes there indeed is good value in meeting people with different agendas and different backgrounds as they might offer insights that one would not know beforehand would be valuable. The initiation of the discussion was taken from experiences from innovation literature (as mentioned before) in that actors from different perspectives bring in ideas that might not otherwise come forward.

A meeting with the Ministry was subsequently setup, but cancelled at the last minute, but that did not faze Arthur much. As it turned out, Arthur had taken an interest in the different projects and thought to help where he could, even, it seems, without any direct benefit to himself.

The following Sunday, Arthur setup a meeting with people with interests in Anders ideas (i.e. water and sewage professionals) – and the initiation of this process was Arthur – not Anders.

Trip to Tanzania	Dec. 2011				
	Tuesday & Wednesday	Thursday & Friday	Saturday	Sunday	Monday
Activities	Arriving at TCDC, Arusha Tour of TCDC etc.	TCDC, Dar es Salaam Other meetings	Meeting with Arthur	Meeting in park	Meeting Belgium NGO
	Dinner				

Timeline 6: Remote Sanitation aka AquaPlanning

The processes here were based on what Arthur had noticed, and he did not know anything about sewage and water (other than personal experiences – so one might say that Arthur is networking outside his immediate field of interest), so he did not attempt to discuss solutions for Anders, but suggested to enrol external actors that could provide insights (Arthur becomes a facilitator). By introducing external actors into the processes, Arthur is attempting to, as is interpreted here, to create a platform of external validation (again a process envisioned by access2innovation as part of the makeup of good processes when trying to do business in Sub-Saharan Africa). He is trying to give Anders an opportunity to discuss his ideas with likeminded professionals, so that he might *learn* about unmet opportunities etc. What this access2innovation facilitator would have expected to see, is that it was not Arthur who pushed this agenda. It "should" have been Anders who hoped to enrol likeminded professionals to discuss his ideas, so he could validate them. But instead it was someone in the context who set it up – it was Arthur. And the only reason that Arthur had become any component in the life of Anders and his business, was access2innovation and the facilitation of this researcher. Or more practically, Anders had been motivated to meet someone, which for Anders made no sense in meeting.

One new idea emerged during this meeting that sewage canals of Dar es Salaam were in a poor state but nobody knew in reality how bad they were, so Anders recognised such a problem (noticed from past experiences) asked if any of them knew about TV inspection (bracketed the problem to be linked to that which he knows), as was the common practice when surveying sewage ducts and pipes in Denmark. And no, such things were to the knowledge of the meeting participants not available. Anders fundamentally saw an opportunity he might explore, an idea directly linked to his own specialty based on years of experiences.

In a process perspective, it is interesting to see how new knowledge can emerge and how it to some degree offers inspirations to an actor, but how these inspirations do not take hold in any significant way. In terms of Anders there is an increasingly strong pattern of behaviour, or actant, that the process of validation is anything but scientific or rigorous, and validation is more often motivated by someone else that himself. If any single actor can corroborate Anders' idea, then to Anders that makes it a good idea – despite the quality of the assessment was at no point put into question. If Anders further down the line; i.e. starts to take his first step, fails to find a new foothold that perfectly suits his preconceived idea, he is more willing to drop the idea than to investigate alternative routes.

There is also the matter of networking where Arthur comes up with a potential solution, and Anders could not grasp how this could be possible. Whether or not the meeting with the Ministry failed, and how this influenced Anders is unsure, but to this researcher, the idea of externally validating and exploring ideas (such as the incident with Arthur) did not seem to affect Anders in any significant way. In other words, he did not start networking after this experience, even though he quite clearly could (or maybe should) see a potential benefit from talking to people outside his own field of interest.

On Monday (the day Anders and Torben were returning to Denmark) a Belgium NGO was contacted, again by Arthur, to arrange a meeting as they too had interests in water and sewage issues. And Arthur would drive the two people from the firm and this researcher from place to place.

Trip to Tanzania	**Dec. 2011**				
	Tuesday & Wednesday	**Thursday & Friday**	**Saturday**	**Sunday**	**Monday**
Activities	Arriving at TCDC, Arusha Tour of TCDC etc.	TCDC, Dar es Salaam Other meetings	Meeting with Arthur	Meeting in park	Meeting Belgium NGO
	Dinner				

Timeline 7: Remote Sanitation aka AquaPlanning

This meeting with the NGO did not yield anything useful for Anders, he said after and none of it has had an effect afterwards.

6.1.7 Regrouping

When returning to Denmark, Anders had almost discarded his rainwater collection idea, and subsequently had to let Torben go, as Torben neither fit the new emerging ideas nor had he delivered any results (spring of 2012, Field Notes). Anders had to regroup, so to speak, and figure out what to do next.

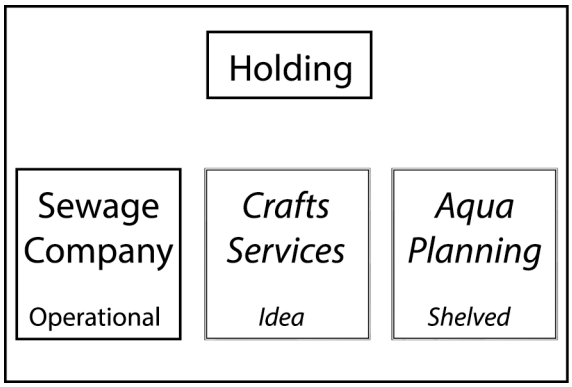


Figure 27: Interests shifted
Source: Data interpreted by this researcher

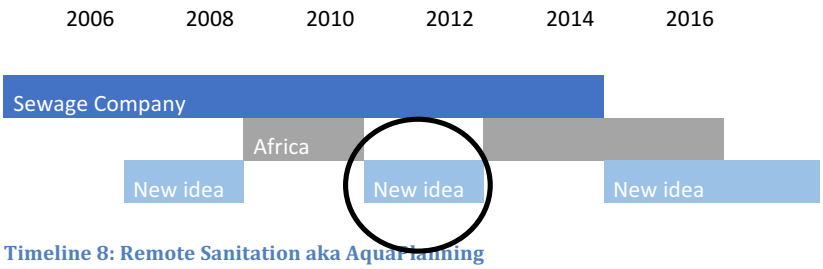
Anders shelved his Aquaplaning business project, and started contemplating alternative ideas for doing business in Africa. In his own way of expressing it, he felt that opportunities were there for profits and that it allowed him to do something that gave him a greater sense of purpose (other than profits). Anders sensed in other words that while profits were relevant it was the social aspects that motivated him.

He called this researcher up one day to make a proposition (August 2012, Field notes, see appendices). As this researcher, as perceived by Anders, had experience with creating business (which was indeed true), also had an ability to gain access to people in ways Anders was not familiar with and had better linkages to Africa than he did, maybe this researcher would be interested in working more closely with Anders in working out how he should proceed. This was compelling for this researcher for two reasons: 1. it would allow access to more data, and 2. a personal interest in working with something familiar to the researcher led to an agreement of working together, which led to numerous deliberations (which would amount to close to 200 hours of conversations and similar – Field Notes, see Appendices) over the course of three years.

In a process perspective Anders had noticed that he had some personal shortcomings (lacked the ability to small-talk etc.) and subsequently bracketed the solution as a matter of finding someone who could do it for him. He therefore sought to enrol this researcher as someone who could provide this skill-set to his business in some way. And as resources were made available in part through the access2innovation relation to do so, and in part that there was an opportunity to gain more data, fit seemed to be there. The process this time was also closely linked to Anders, through bricolage, in that he would enrol an actor mainly because he found the actor pertinent for the job – and available. In effect, it was a process of internal validation more than external. Had Anders wanted to discover that the access2innovation consultant was the "right" actor he could have spent time and energy to seek external validation, but he didn't. And incidentally the access2innovation consultant (this researcher) did not object, as rather worryingly, the proposition to collaborate with Anders suited this research agenda. And it could be argued that since the facilitator already was linked to Anders and that the cost of receiving assistance was minimal, it might have been what made most sense to Anders. In fairness, these courses of action were not taken with the awareness fostered today by this researcher.

6.1.8 A new beginning

Very early in this new collaboration Anders was proposed, by this researcher, to a new perspective, in that he seemed to struggle with finding opportunities and assess the viability of his ideas (validation), and that maybe he needed someone to work with him on a daily basis who could do some ground work and market research – vis-à-vis find external data.



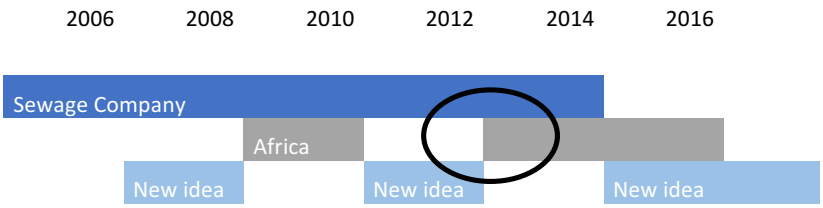
Timeline 8: Remote Sanitation aka Aquaponning

Note: In this space in time of the research, Anders was talking to the researcher not about Africa as such but also his New idea, which has been thought about before – the new device targeted at the craftsmen industry.

The idea of contacting the vocational college in Aalborg, Denmark, (University College North - UCN) to find potential students who needed an internship placement was raised, and fairly quickly an international marketing and sales student was taken in for at least 3 months of internship. She would then help Anders research markets and provide some sparring on what to do – as part of an external validation process. As she was not a professional yet, Anders, considered the intern someone whom he could only *hope* to gain something from, but not *expect* to get something from. But taking in an intern was at no perceived cost to him, he quickly agreed to take her in. (this incidentally led to other students being brought in for some of Anders' later projects, and as of 2016 it is still a practice he utilises from many different education programs and disciplines in what is his main company today).

The process of engaging external actors then was again some sort of budget or *calculated* risk, and a matter of enrolling that which is a. possible and b. not at any significant cost. If these two criteria were met, then the actor would be accepted – a recurring process or an actant. What is not known is if Anders had a bigger budget or financial stability, he might have endured a lengthier process of enrolling actors that are a better fit, than choosing actors because they were cheap and available.

Around late 2012 Anders had proposed to figure out how to make a sewage TV inspection business in Dar es Salaam, and potentially other bigger cities of African countries, with the help from his intern, and started to look into what it would cost to acquire the TV inspection technology and send it there and the whole financial needs it would require.



Timeline 9: Remote Sanitation aka AquaPlanning

Note: Anders was here spreading his interests over three things at the same time: Sewage Company, the new idea and then now also if something like the TV inspection in Tanzania might work.

Anders made sense of the challenge as a matter of calculating and planning what he believed would be the most important issues and costs – a process familiar to him in his other commercial endeavours. The intern came up with

a calculation that showed a significant amount of money was needed to get the new Tanzania operation off the ground.

Anders himself did not have that sort of money upfront so he would need to consider alternative ways of making it happen. Anders' immediate approach was to seek out alternative funding opportunities through initiatives such as access2innovation, but also other foundations and supporting Danish efforts.

Anders was then introduced to a potentially useful tool: business model CANVAS (Osterwalder et al 2010), as it is a tool that could allow an actor to discover a new way of doing business that in this case might not require a high investment cost. The idea was that this tool could work as a communication device from which at least he and the researcher could discuss different business models and explore alternative ways of making a business viable before committing any resources to implementing the idea (as has been, and remains the general idea of access2innovation facilitation). But the business model approach did not really catch on it seemed. Anders, half way rejected the canvas approach, as he was quite sure that he would do the following:

- find a way to finance the technology needed.
- ship it to Tanzania.
- go there himself and register a company
- train some locals to do the work.
- go back to Denmark to take of business there
- once in a while head back to Tanzania to help the business move along
- and take it from there.

A process of creating solutions not far from what he knew well in Denmark, albeit with a significant physical distance.

One intervention was made, based on this researcher's understanding of how thinking in a business model way could help, was to take up one crucial assumption about the business idea: that the local Tanzanian people he would hire, would indeed be able to do the job properly when Anders was not there. The concern was expressed as a growing number of stories told by locals and experiences from organisations such as the Danish Government program DANIDA (Field notes from talks with Danish Foreign Ministry and Embassies), suggested that one should not consider a local Tanzanian worker to have the same work morale as that of a Danish craftsman. A sentiment corroborated during an interview with a Danish national based in Dar es Salaam that this researcher had interviewed (Interview #1, Laustsen,– see appendices). What the distinction was in reality was unsure, but to assume

that a business could be created, people trained and then left to its own devices, seemed at best to be wishful thinking.

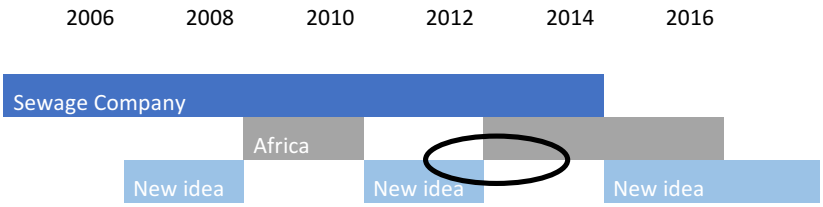
Anders did *not* notice this disparity in that way at first and therefore did not see a need to deal with a problem he did not think existed. But in the course of examining the business idea he came to realize that there was not really a chance he was willing to take; i.e. if success was to come of his idea, he would have to go to Tanzania and spend a lot more time there than he had available, and his family was not interested in moving there. So, Anders discarded the TV inspection idea, and started again to look at other opportunities.

In the processes of showing Anders "the light" that local people might need more attention and the presence of Anders when building his business, this researcher tried in many different ways to convince Anders that he should not take it lightly. One of the teachings from the commercial actors, which the different researchers have talked to through the access2innovation activities in East Africa, showed quite clearly that it was an absolute must that any Danish (or other actor for that matter) would have to accept that doing business in Africa is a matter of being there to take care of things (e.g. interview #3 FanMilk , #6 Bressendorf– see appendices) . What particularly made Anders more aware or clearer about this problem is unsure. But from a research perspective the only conclusion that can be drawn here is that Anders only after being subjected to this researcher's interventions on this matter by e.g. relaying that these were experiences from other companies that he should be aware of this issue, ended up accepting that it was going to be a problem. The researcher becomes a point of validation, but the researcher became the *only* point – no other efforts of seeking second opinions were attempted by Anders.

Again, the actant here is that Anders seems to trust the singular source in front of him and finds no reason to seek other opinions or other.

6.1.9 Clouding focus

Anders eventually came to work on what would become the Remote Sanitation idea, but before this project came to his attention he had other plans for his primary business (the sewage company) in Denmark.



Timeline 10: Remote Sanitation aka AquaPlanning

Note: now the focus was shifting more towards the New idea, and slightly away from the other activities.

The technicality of the business idea is for this case story maybe not important, but the processes of pursuing this New idea was. Anders called this researcher and said that he had another idea, and although it did not fall into the main idea of access2innovation and Sub-Saharan Africa in any way, he would like inputs to his other ideas; i.e. Anders sought validation. An agreement was made, as it was still an opportunity to follow for research purposes, about what an actor was doing when trying to find new business opportunities.

In some way, Anders was *allowing* this researcher to be enrolled into his activities, as maybe the researcher fit specifically his visions. The researcher suited his activities somehow. This is of course speculation, as it has not been investigated.

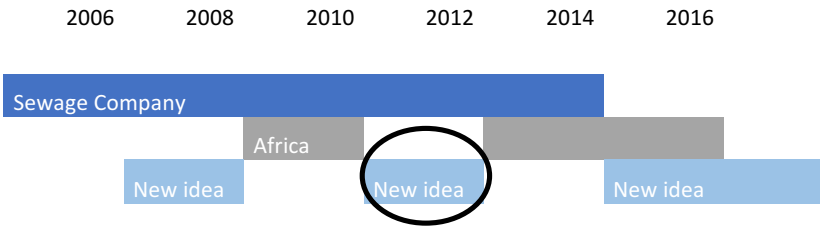
The new idea was that Anders thought of a gap in the market in Denmark for craftsman and the work these craftsmen were carrying out (please note that the case is now diverging away from the access2innovation projects, and also a divergence from dealing with uncertainty). He had thought of a quality control service he would be able to provide to not only craftsmen but also those that use craftsmen (e.g. house owners that need a new roof or such things). Suffice it to say it was a service where greater transparency would be offered to all actors in the value chain of craftsmen, including manufacturers of goods, wholesalers, craftsmen, insurance companies and end-customers. The idea was actually a reinvention of the original idea that made him go into the sewage business years ago, and the idea had gestated and taken on new concepts, and he thought he might give it a chance.

In order to come up with a way to provide this solution, Anders *bracketed* the challenge as something to with computer software technology, so *he* started to map out what he thought the technology should look like – he did *not* attempt enrol others in this process. This researcher intervened (Field

Notes) and asked Anders if he had talked to (enrolled) any of his intended customers, craftsmen to validate his idea and whether it indeed was or would be in demand (which is a business model approach). Anders adamantly said that *he was sure* that his idea would be greatly accepted by the market. But had he asked anyone? Well no, he said, because he was sure. He was then offered by this researcher, to at least try and ask a potential customer as he might be surprised to learn something that he did not even know to consider (much as the experience with speaking with the windmill maker Arthur in Tanzania) and that maybe what eventually becomes his business success story in a few years' time is going to be something completely different than what he set out to do. He really did not feel like doing it, as he said it did not come natural to him, and as best as Anders' responses to this line of enquiry could be interpreted, he did not see the potential value of talking to people without there being a sale at the end of a meeting. Anders simply did not see any value in it (which he said explicitly).

So, in a process perspective, the "model" of how Anders does business has not changed in any particular way over the course of this researcher's interactions and interventions. Anders still notices unmet needs in a market, brackets this into a solution of sorts, and sets out to try and build it – without engaging external sources in validation processes.

Again, the business model idea was brought into the mix, in the form of the Business model CANVAS. Again, Anders did not really find it relevant or interesting enough. He continued to build his business from his own perception of what it should look like. A few weeks pass with no word from Anders, but he then tells this researcher that he overcame his suspicions and had elected to meet with some craftsmen and to share his idea, and they had found the idea interesting and had offered other things that they also would like the solution to include. Yet other weeks pass, and Anders calls this researcher up to get input on how insurance companies might find the solution interesting (a rather arduous technical setup not relevant for this case story), and while the telephone brain storming took place Anders said, after this researcher came up with a new idea of how to include insurance companies (as best as can be recollected, as the conversation was not recorded): "Well, do you think that they really would…[he did not finish his own sentence but just added the following] well, of course I could just ask them!".



Timeline 11: Remote Sanitation aka AquaPlanning

Note: Somewhere around this highlighted point in time, something happened to Anders, and this idea of enrolling customers emerged as way to go forward. From the outside, it seemed to be something related to the activities related to the New idea, but was not clearly uncovered.

6.1.10 A pivot in business understanding

Somehow Anders had pivoted from not enrolling actors , to suddenly appreciating the value of asking questions directly and trying to validate with external actors. He had moved away from trying to simply implement an idea, to also include processes of learning. Anders proceeded to try and get dialogues going with different actors, including insurance companies and called this researcher up to have a new meeting to discuss different approaches to his new ideas.

Anders had recognised and noticed that there could be value in enrolling external actors as part of a validation process. However, there seems to be a lingering "mode of conduct" – an actant – that has survived with Anders – his propensity to trust singular actors. Or in other words, if one single actor and Anders reach a mutual understanding then that is enough for Anders. Anders does not go out to other e.g. customers, to take in their view. Anders was certainly not performing a deliberate or methodical validation process.

During a meeting with this researcher soon after (Field Notes), Anders presented business model canvas examples from which he would discuss his ideas. He had essentially taken it upon himself to use the tool he previously had discarded.

His attempts at conveying his idea through a business model CANVAS were at the time quite clear to Anders himself but this researcher was struggling a little to get a grasp of it all. It seemed that Anders at least had utilised the Business Model CANVAS tool he had been presented with over a year earlier,

but had utilised it in a way not familiar to this researcher. So, this researcher was trying to make sense of it all, where the researcher should have spent more time trying to uncover how it made sense to Anders - that was a research mistake.

One "mistake" this researcher, or rather action research consultant, thought Anders was making, was that he had thought the canvas represented the whole business he was thinking of, but the canvas, was to be used for every value proposition the firm thought of offering.

The meeting ended with Anders looking a little more confused than he was when the meeting started. Why this is, has not been investigated. It is fair to assume that he again had learned something he did not expect and that it had turned things around for him. And this researcher cannot be excluded from being part of the processes as it was quite clear that the researcher *intended* to help him, but, subjectively speaking, ended up only making him more confused.

6.1.11 Remote Sanitation project

Anders continued to pursue his idea of making quality control for craftsmen operating in Denmark, but was contacted by access2innovation as there was a new project that might fit him well in an emerging market context: it was what was to become Remote Sanitation. A workshop had been organised October 10, 2012, where all access2innovation projects were going to be shared with any interested actors from which companies would be allowed to ask questions and submit their interest in looking at these projects. Of the five different projects presented on that day, one was a sanitation issue related to Red Cross camps; camps which were erected in relation to humanitarian emergencies across the globe, and were erected to house the Red Cross staff and volunteers. These camps were struggling with finding sustainable waste solutions. For instance, in Haiti when the earthquake devastated the country, over 10.000 representatives from many different NGO were estimated to have visited, which gave rise to waste problems, as black and grey water could not be dealt with, compounding the already untenable ecological situation of the country.

Anders subsequently expressed very clearly after the workshop that he could not see what the big problem was. In his mind the solution was quite simple. All Anders needed was to determine what colour the client would prefer the solution to be in.

To recap: a new idea emerged through access2innovation that a client could not find a solution for – better sanitation in camps. Facilitators in access2innovation then enrolled Anders to the project, so that he could view it from his perspective. Anders took notice and instantly *knew* how to make that solution (bracketing), and felt puzzled, he said, that no one had done it before.

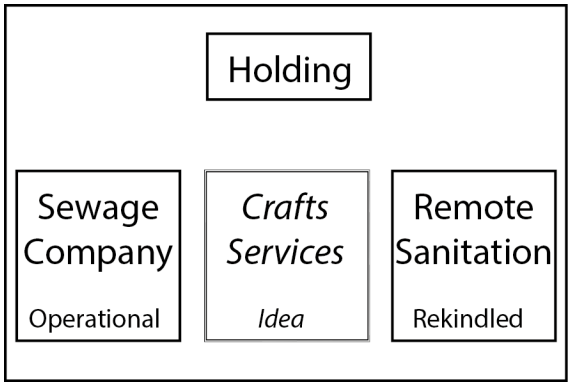
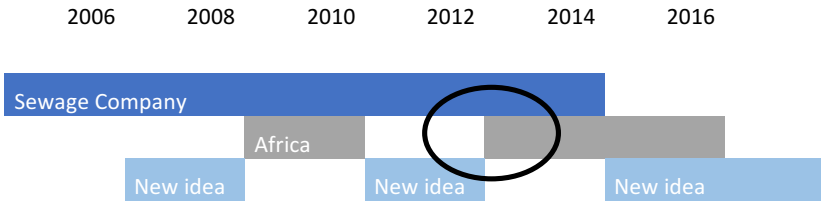


Figure 28: Interests shift again
Source: Data interpreted by this researcher

Now Anders still had his full-time sewage company, still fiddled with the new idea of making some software based craftsmen service device and now also was interested in this new sanitation project. This led the Aquaplaning efforts to be renamed into Remote Sanitation as an expression of how the envisioned sanitation solution created for the Red Cross would be utilised in remote locations.



Timeline 12: Remote Sanitation aka AquaPlanning

Note: here the Remote Sanitation concept emerged early 2013. The New idea was still an idea, but for some time it was not, as was possible to observe, prevalent whilst the Remote Sanitation concept was being drawn up. The New

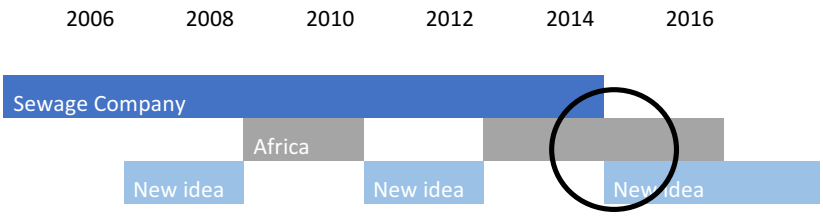
idea did not go away from 2012-2014, but activities surrounding it were not visible.

A meeting between the Danish Red Cross (DRC) and Anders was set up by access2innovation and took place between the lead project manager from the DRC, Anders and two researchers from access2innovation (this researcher included). During the meeting the DRC delegate said that they had tried for years, even decades to find a sustainable solution but it had not been possible. Anders then proceeded to ask questions on peripheral issues, what had been done before and mapped out his own ideas. The meeting concluded by the DRC delegate stating that they needed some sort of blueprint of Anders' idea for the delegate to assure his superiors that there could be a fruitful partnership in progress. Anders went home and made a rudimentary description of his idea and sent it to the Red Cross.

After some correspondences, not visible to this researcher, an agreement was reached, Anders submitted his candidacy to receive funding from the access2innovation program, and would commence with the development of the prototype. His application was granted after an access2innovation Steering Committee Meeting and Anders was principally allowed to proceed. Note: All these processes were based on noun-based actors.

Anders realised in the spring of 2013 that he was spending too much time away from his primary sewage company, and that if he would be able to do anything significant with these new emerging projects (he still operated the sewage company at full speed, his new idea of a quality control service , which he tried to get going, and now also a Remote Sanitation development project with the Red Cross) he might have to sell the primary business. He did so on July 1, 2013 and started dedicating himself to the new ideas.

In a process perspective, Anders had noticed the resources needed to go into a new business field, and had bracketed the problem as something to do with him. He was the centre of these projects (what is coined here as the 'quasi-object'), and he could not see any other way forward with him making adjustments in how he spends his time. Thus, the main activity – the existing company – was sold, to liberate resources. These processes can be interpreted as processes of trying to become stable.



Timeline 13: Remote Sanitation aka AquaPlanning

Note: Anders sold his company in July 2013, and dedicated, he said, his efforts on the Remote Sanitation concept. But the New idea kept coming back

Anders continued to utilise this researcher as a sparring partner to help things move along, and during these processes this researcher expressed concerns that maybe Anders had overlooked something! The concern that the Red Cross had tried diligently for many years to find a solution that could work, and that Anders simply thought it to be a very simple solution, somehow indicated that maybe Anders had not truly understood the challenge. So, a reinvestigation into what the Red Cross had expressed was made, and to provide the reader with an understanding, here is a short conceptualisation of the problem and Anders' immediate take on it:

- When a couple of hundred people live in camps (not refugee camps, but camps for Red Cross personnel, who work in disaster areas) they require water, food and good hygiene.
- Such camps produce significant black water (toilet) and grey water (shower and kitchen water) and also food waste from the kitchen.
- The camp usually has rudimentary solutions that are in part toilets and in part bathroom stalls, made of plastic.
- Sewage linkages and pipes are made to collect the different waste into varying types of hoppers, dependent upon the size of the camp.
- These hoppers were sometimes massive rubber bags with several tons of capacity, would fill up.
- When the camp had done its emergency work and was to leave the area, they would arrange – if at all possible – for a local sludge dredger to come and empty the hoppers, bags, containers or whatever was in use, and take care of the waste.
- The Red Cross were however confident that in the areas of the world they usually operate, the sludge dredger, if such a thing even existed there, would most likely empty the contents somewhere in the ocean, a ditch or at least somewhere where there is a vast environmental problem to follow.

- It was primarily a problem for the Red Cross that they were unable to dispense with the wastewater in a sustainable and responsible fashion.
- Some solutions had been tried out but none of them had done the job.

- Compounding the problem of finding usable technology was the challenge of logistics.
- The Red Cross would aeroplane in equipment so storage volume and weight was at a premium. This meant that also the size of the camp materials could be a problem as they exceeded a standard pallet size. They could not load regular freight containers onto planes etc.
- So, whatever new technological solutions would be derived, size and weight was also a challenge. So, the whole camp was essentially up for a redesign, but it was the waste issue that remained the big hurdle.

Anders started by redesigning the size of the toilet (the actual toilet where one goes to defecate etc.) to make it smaller and smarter. He spent some time with this, also including a designer he knew could help him (an actant – to enrol known actors and instinctively trust them to do the job). But the curious thing was, and this was what spurred this researcher to raise these concerns:

a. during a workshop with the Red Cross in 2013, which Anders attended, another company could how that they had already developed an idea about the toilet and had come very far with developing it, and Anders witnessed the presentation of this toilet (or so it should have been)
b. and the *real* problem of *treating* the wastewater, had not been understood by Anders as a significant issue.

Anders must have sensed something very different to what this researcher did, and as it turns out, also different from what the Red Cross did.

This researcher went on during the meeting with Anders to try and draw out what the challenge was really about, and still Anders did not really see it similarly to that of the researcher and most likely also the Danish Red Cross. The toilet part of the challenge (the plastic seat and cabin) as set out by the Red Cross was still the most interesting thing to Anders. No matter the interventions by the access2innovation facilitator (this researcher), Anders persisted. However, at some point when Anders kept meeting with or talking to the Red Cross did he become aware of the waste problem (leading away of waste water and the treatment of waste) and moved his focus. In other words, the problem was not smaller toilets, as this was already being taken care of by someone else; the problem still was treating wastewater sustainably.

But this change in focus also took the wind out of Anders, so to speak. Anders was not really that interested in the waste treatment aspect of the challenge, but he persevered and started to think of transportable and sustainable wastewater treatment solutions. It took an estimated 15-20 different encounters, reminders and meetings between this researcher, the Red Cross and other access2innovation personnel and a few others, for Anders to realise the *real* problem that the Red Cross were having. Essentially none of the access2innovation staff were equipped to help Anders see or understand the problem. And incidentally, neither was the Red Cross.

Working together with this researcher Anders only very slowly came to realise that he was creating an idea without truly understanding the consequences of it, or even what really was going on. So, what Anders originally thought was a simple matter of deciding what colour the solution should be painted in (he was apparently thinking of plastic toilet seats and cabins), developed into a realisation that the challenge was something substantially different (sustainable waste water treatment).

In a process perspective it seemed, although very difficult to rigorously conclude, that Anders had noticed something in the Red Cross project when it was first shown to him. He had latched his energy onto a solution (bracketing) as something to do with toilets, even though none of the partners involved in the project viewed it that way. And even after several attempts at showing this to Anders he remained dedicated to creating a smart toilet. It was as if, again this is speculation, Anders simply stops listening when he finds something that he has validated with himself as something that is worthwhile exploring.
But after learning that his initial efforts in developing a toilet solution was not really what the problem was about, he did something quite interesting.

He submitted to the Red Cross, that he volunteered to come on the next emergency they would deal with so he could learn first-hand of the challenges – a process that is an actant of Anders. Not long after (Autumn 2013) the natural disaster that happened in the Philippines called for the Red Cross, and Anders subsequently spent two weeks there getting to terms with the challenges in a real Red Cross Base Camp.

Upon his return, he was indeed better informed, he said, but in business terms he only realised that a solution was indeed demanded by all NGOs who went to the Philippines, and that none of them had found a sustainable waste water treatment solution. Maybe then did it factor in that his pursuit of creating toilet seats was the easy part. He then spent time with this researcher to figure out how to proceed.

Sense making then is *seeing*. The *concept* of a problem is *not* enough for Anders. He has to witness something with his own eyes to make sense of things.

Drawing upon the experiences of access2innovation Anders was proposed to search for partners, as Anders did not have the financial resources to develop a solution himself, nor any manufacturing capability to make a prototype or to market a product. He then started to survey potential partners, rather sporadically, and talked to what is Denmark's oldest Corporation, Desmi (a build-to-order pump company), as he knew them from previous collaborations, and they knew him and there was a potential for common interest in developing a solution. This however did not come to fruition (yet). But where Anders previously had recognised that he needed help in engaging others, networking etc. this time the project made more sense to Anders as the technologies involved were technologies he could recognise and were in some way familiar with. He then proceeded to find partners, and the immediate contacts he looked up were those that he knew, which is an actant. But he, to the knowledge of this researcher, did not do much in trying to enrol actors he did not know beforehand. The processes of enrolment were not of blankness, but of the something else!? Anders were engaging those that fit with his own perception of what was needed, and did not allow, or submit requests to other actor to bring in their ideas.

Anders looked at what opportunities to make a prototype were available. An idea of using the sun as a catalyst to convert contaminated water into clean water, much as he had observed at the TCDC in Tanzania, but in transportable vats, had emerged.

Note: Anders was now in late 2013, but was reflecting back at a solution someone had already made – in this case the water cleaning facility at MS TCDC in Arusha, Tanzania, which he witnessed during his trip there in 2011.

He realised (noticed) that instead of trying to figure out if it was possible for such a technology to work, he thought of using a partner, but again he was hindered due to lack of funding. He found out that he could apply for a development grant from the Danish Government where he could hire a knowledge institution to do the development or also a viability testing for him. He applied for and received a grant and set the Danish Technology University to do some technology validation work *for* him.

This however showed itself to be very unfruitful, as the Danish Technology University were unable to tell him anything he did not already know, he said. The Danish Technology University had not been able to show interest in any

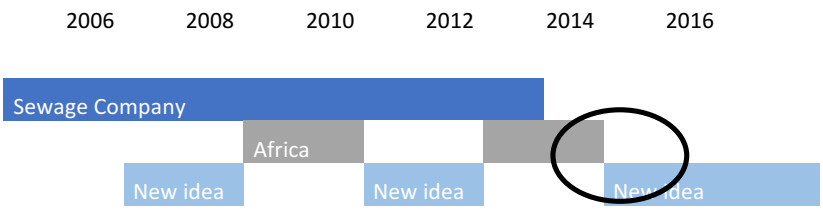
interpretations of what Anders wanted, they had only followed the application, as they understood it. In a process perspective, it would seem that Anders set the DTU to prove or disprove his technology, but as the ideas of Anders in engineering terms were rudimentary, the conclusion from the DTU was also rudimentary; i.e. yes, the technology should be able to work.

The Danish Technology University in other words, were not exploring other vistas or were not motivated to enrol Anders in a blank process of inscribing other attributes to the wastewater treatment solution. In other words, the interaction did not seem to allow for alternative approaches to the solution.

Anders talked to this researcher about what was needed to get things going, and one intervention attempted was that (as would be suggested in innovation literature) Anders might not need a full working prototype, as he did need something to show people, an artefact to help communication and enrolment, so when he talked to potential customers or investors he could point and say "this is what I was thinking of…" and he would then have a tool from which to talk to people and enrol them in partnerships. This, Anders said, seemed to be a good idea, as he thought that would be very easy to do. But he never did. And the reason for this it seems was the following.

His other business idea, with the crafts services, was taking up more of his consciousness as craftsmen were starting to sign up to his idea spawning a great sense of achievement and direction for Anders. In other words, that project was going somewhere and the profitability of it at least seemed to be achievable, and it involved working with people with whom Anders was already familiar (a sense of stability). The profitability of something was emerging and that made sense to Anders, and his awareness started to centre on those activities, and not the Remote Sanitation project.

As this thesis is being put to writing Anders is uncertain about where to go with the Remote Sanitation project.



Timeline 14: Remote Sanitation aka AquaPlanning

Note: In this time of the research, the Remote Sanitation was still there, but to this researcher the New idea seemed to make more sense to Anders.

In short, other opportunities were vying for Anders' attention, and the Remote Sanitation project was treated increasingly with a secondary glance.

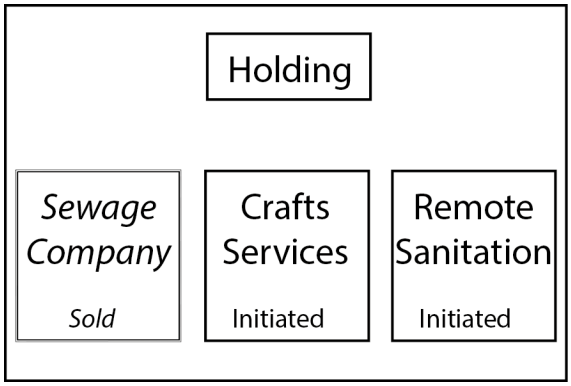


Figure 29: Again, a change in interest
Source: Data interpreted by this researcher

In between the Remote Sanitation project being tested and his Craft Services system being developed he started to become frustrated over the lack of personal income. He expressed a concern that all of his new ideas were taking a lot longer and a lot more resources to become commercially viable, than he imagined. He was in other words, personally motivated to make activities that would be able to help pay for his bills. In other words, the lack of funding is a major factor in the processes of Anders, and because of the lack of funding his processes of sense making and enactment gravitates towards stabilisation more than exploration.

6.1.12 New tool

One of the thesis supervisors of this thesis had sent (early 2014) this researcher a YouTube link with a fellow, Eric Ries (2011), who works with a new entrepreneurial approach to business – the Lean Start Up approach. Eric is a multi-entrepreneur with considerable successes behind him. After this researcher had looked into it and read the book Eric Ries had written (Lean Start-Up, published in 2011), Anders was recommended that this approach might be better for him than his own way (Spring 2014). The relevance of the book for this research was directly linked to the concept of external validation, and the Lean Start-up idea was centred on fast development of a

product with customers. In other words, the opposite of developing a product at company headquarters and only engaging customers when company workers themselves found the product to be as good as it should be. In simpler terms, Lean Start-up is a process of continual validation with customers *while* a product is created, and the process of validation is designed to follow scientific principles; i.e. that the data collected should be scientifically sound and representative. And crucially the method purported that it was a *cheaper* way of learning if an idea is viable or not, than the conventional "develop a product at the office, and launch it when its finished" approach. In other words, a method that, in the eyes of this researcher, should suit Anders well.

Within the same week of presenting this method to Anders, an internal email was sent out by Anders to his employees, where he states that he has been listening to the Lean Start-up book (an audible version of the book) on his many car trips to meet potential customers, and that it had inspired him to take a new approach to doing business. And this, he said in the letter, would spawn a new paradigm for his business.

This of course was personally very rewarding for this researcher and access2innovation facilitator, but instead of leaving it at that, a concern emerged that Anders might this time rely only on his own assessment or validation as to what this new method means, which would mean that he would again behave in ways not fully recognisable. In other words, how the researcher made sense of the concept was different of how Anders would. Had Anders made sense of it in his own way? Well yes, he did, and it took time for this researcher to realise that Anders had only listened to the first 4 or 5 chapters of the book, and had not listened to the rest, and this alone was enough for him to go about changing his business approach.

Subsequently this researcher tried to understand if Anders had indeed started to follow a new paradigm (which incidentally included following the advice of the Lean Start-Up ideas; making small versions of his new product and testing it scientifically with his proposed customers, continually over 6 weeks or so, and also a few other things), and it seemed to this researcher that Anders made short-cuts. The new Lean Start-Up model required diligent and continual interaction with clients, but Anders would have one single encounter with a few clients, from which he would blueprint a new version of his product from which he expected that all problems would be solved. This to this researcher is not the idea of the Lean Start-Up model; in fact, it is almost the opposite. But never the less, Anders still clung on to his own method and process of creating business, and it seems to this researcher that he learned very little, or to express it in process terms, he had not been able to create new actants to replace those that were governing his existing ones.

He had earlier shown that once he latched onto to something that made sense to him, he stopped listening to further inputs, much as he listened to the audio book and when he thought he got hold of what it meant, he did not listen to the rest of it. It happened with the rainwater collection thing, and the Red Cross, and it happened here as well.

As of mid 2014 (and still so at the start of 2016), the Remote Sanitation project has not developed in any way, and a new process was considered, with more funding and more partners, but only due to the pressure of access2innovation project managers – and not because Anders viewed it that way.

There are, despite the many years of interactions between the entrepreneur and access2innovation, still quite different ideas about how to do business. Anders is as of today focused on his own old idea of craftsmen services, and any projects related to access2innovation are at best still at a planning phase.

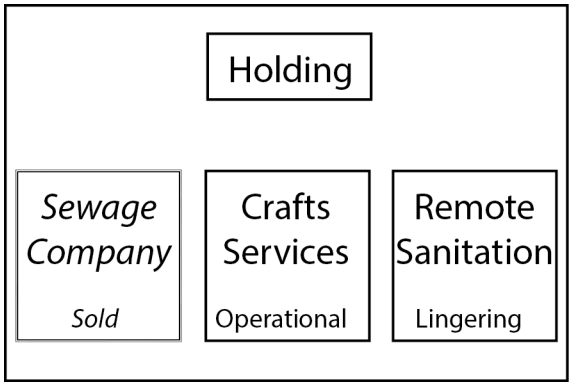


Figure 30: Current state of the entrepreneur
Source: Data interpreted by this researcher

6.1.13 Case in summary

Anders has in his entire career rested his projects on his own perception of what is potentially a good product or solution. There are different instances where Anders notices challenges which leads him to think: "What is going on here?". He then tries to investigate what it all could mean, and at the very first inclination of a potential solution emerges, makes him stop investigating the problem further (processes of judgment) – it now becomes only a matter of executing the idea (making a plan, implementing it etc.). His activities are closely linked to solutions drawn from what he has experienced, and he struggles with getting to terms with the idea that the solution that is actually

needed is something he has never tried to make before, which is evident in the processes of validation. These processes are characterised by a sort of simple process of the first actor that corroborates or disproves that which is validated, has the final word.

In discussing the processes of dealing with uncertainty the activities seemingly best suited to alleviate uncertainty are the verb based actors or experimenting, learning etc. But Anders almost exclusively used noun-based actors of a plan, a budget and so on. When Anders did seek validation (which is a process and verb based), he would discontinue the process of validation when he reaches *a* validation; i.e. when he reaches one source of validation. This type of behaviour might be attributed to the previous way for doing business in the home market.

The actors, interests and activities (meshing) in the case of Remote Sanitation and the entrepreneur Anders in particular, become issues of stabilisation and calculation (noun-based approaches to business), rather that what was expected to be found; i.e. judgments, experimentation etc. (verb-based approaches to business). The processes could then be understood as driven by primarily a human actor, Anders, who controls the resources and has full decision and power to choose what the company, should be doing.

And these processes are akin to a *stage gate* mentality, where the first phase includes two primary activities:

- To continue to develop a meta-prototype (i.e. the idea is stored in his mind, as opposed to creating an artefact for others to see)
- Funding is enrolled to help alleviate the calculated financial risks.

The second phase:

- Where some funding is made available, a pursuit to find specialists who can confirm the prototype, commences. Not acts of exploring and enrolling other perspectives (which is the opposite of blankness).

And there are in the specific case of Remote Sanitation no further developments. However, in an effort to view the project in a new light, Anders travels with the Red Cross to the Philippines to witness with his own eyes what the real challenges were (which could be interpreted as Anders acknowledging that his ideas thus far were different from what was actually demanded by the Red Cross). This primary data collection led to a new understanding of what was needed, but so far, the stage gate approach seems to prevail, and has yet to yield any results.

As will be visible in the following, this approach is not shared by the other cases in this thesis.

In sub-conclusion, the actants of Anders are the following:

- The process of validation is that of a single point of validation.
- The enrolled actors who validate are probably chosen because of:
    - Familiarity
    - Availability
- The acts of learning are discontinued at the point where something is interpreted to make sense, which is translated into a new action.
- The processes of sense making are defined by an actor who remains confident in his previous (and successful) methods of business.
- The enrolment processes are clearly defined by an actor (quasi-object) that is convinced that the solution should be something very specific; i.e. an actor who does *not* seek others to inscribe attributes.
- Essentially Anders acts as an actor who is calculating risks (as opposed to alleviating uncertainty)

6.2 The case of Sky-Watch (aka Eye In The Sky)

The following case depiction will introduce in greater detail the background story of the company as there are better-defined elements to it than the previous case depiction of Remote Sanitation, and also because the reader will be offered a greater sense of the challenges this company faced.

Landmines and explosive remnants of war contaminate as many as 200,000 square kilometres of land in more than 90 countries around the world causing death of more than 5.000 people a year in addition to the effect of not being able to use agricultural lands, or having access to water holes etc.[28]

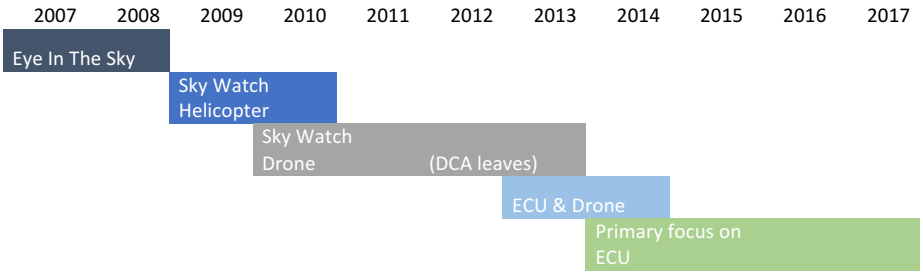
Figure 31: Example of demining map data
Source: Ravn (2012)

This was essentially the background when the Danish Non-Governmental Organization (NGO) Danish Church Aid (DCA), expressed a need to become more effective in de-mining efforts in conflict regions. De-mining is an arduous task involving many man-hours of prodding the soil with a stick to ascertain if a landmine is present in any given location. As military landmines are generally dispersed within locations that are worth protecting, DCA would like to learn more about the most likely places for mines to be found, rather than to work on every piece of land. But high quality pictures and map data are difficult to come by as pictures are hard to get, satellite imagery are not in high-resolution and workers on the ground have little or no idea if the area they are surveying is likely to have landmines or not.

[28] http://www.humanitarian-demining.org/index01.asp

6.2.1 Initial ideas

The access2innovation initiative brought businesses, researchers and students on board in 2007 to investigate the challenge put forward by the DCA, and an idea of making a remotely controlled helicopter emerged (Ravn 2012). The emergence of this idea can be attributed to in part the idea generation meetings and in part to the participation of one actor who already had played around with model helicopters as a hobby. The noticing of the challenge of obtaining high-resolution pictures of an area was then bracketed as being solvable by creating a helicopter of sorts with a camera attached to it. The enrolment of actors to the project was largely performed by access2innovation who openly invited actors to join in, coupled with contacts being made to some who were already familiar to access2innovation.



Timeline 15: Eye In The Sky aka Sky-Watch

Note: this timeline depicts in rough terms the different changes the company underwent over time, from starting out as Eye In The Sky, to Sky-Watch as a helicopter etc.

At this point in time (2008) the project, the actors, their interests and the activities were meshed towards processes of trying to come up with a new technology. The enrolment process then was very much centred at the quasi-object of problems with obtaining good quality overviews of an area for demining purposes, but it was essentially (as interpreted here ex post) a matter of bringing together actors that could contribute to the development of a specific product (blankness, as the quasi-object was blank, actors could inscribe it with attributes). The actors had bracketed the focus of their attention on developing a helicopter.

The helicopter would then carry a high-resolution camera on-board with a GPS locator and some smart software that would permit the user to get an overview of the land, thus helping the user to form better decisions about where to look for mines. Effectively the new technology, once functional,

would help the NGO, to help the locals reclaim their farmland, and ultimately help with improving the quality of life of peoples in conflict regions such as Sub Saharan Africa. The business idea then would be to develop a technology with large social impact potential.

The concept of the helicopter enrolled different actors with varying qualities and capabilities, which included:

- Researchers from the Aalborg University with particular skills pertinent to the envisioned technology.
- Companies able to supply the intended components, including camera manufacturers, software developers, propeller suppliers, battery suppliers etc.
- DCA having on the ground insight and access to potential customers within the demining sector.

6.2.2 Idea generation

The problem as it was understood at the time was that high-resolution pictures were needed to make better assessments of the land, and since satellites were not an option another stationary flight vehicle was needed – hence a helicopter.

So, the first iteration of the idea was a rudimentary hobby helicopter with a camera attached to it. The first name of the project was coined: Eye in The Sky.

Figure 32: Example of existing technological platform
Source: Ravn (2012)

The business model was developed around a network consisting of Danish Aero Tech, NetImage, GomSpace, Aalborg University and Danish Church Aid, as there was no formal company at this time, but primarily a network of actors all looking to find their own piece of the project (Ravn 2012). A concept was drawn up and a blueprint for the forthcoming innovation was

submitted to the International Centre for Innovation - ICI (at Aalborg University) who could supply funding for new innovations.

The processes then were centred on the development of the prototype (an artefact in the form of a blueprint – not an actual prototype) from which the partners would seek funding to finance further developments.

6.2.3 Changing perspectives

In the time it took ICI (which was widely considered a long waiting time for all involved partners) to release the intended development funds allotted to the project, it became clear that many of the partners only attended the project in the hope that orders would come in on their existing products and also because of the promise of external funding. In other words, they were seeing themselves as sub-suppliers, and were motivated by the availability of funding. These partners had no intention of contributing to any actual product development efforts and were almost exclusively attracted to the external funding available from ICI, but as these funds were slow to emerge, partners with little motivation for contributing to the project stood out more clearly (Ravn 2012).

In the initial phases access2innovation facilitated the project development and by chance one of the involved students in the access2innovation secretariat, Jonas Dyhr Johansen (from here on just Jonas), showed interest in the concept as he was developing a market analysis for the Eye in Sky Concept as a part of his thesis work. Jonas noticed that there could be a business opportunity in the concepts drawn up, but he realized that progress would not come from waiting around for funds – he needed to act (enact his idea) – and since most other actors in the network were reluctant to do so, he decided to make a stand and do it himself. And in doing so he realized which partners were viable and which ones were not and subsequently made a change to the initial partnerships, which in turn changed the business model in particular when looking upon the partner set-up (Ravn 2012).

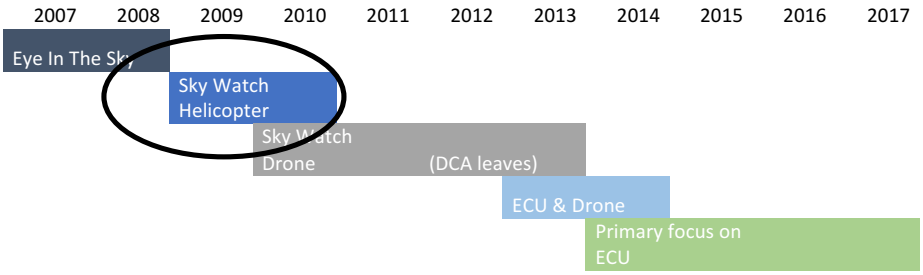
The processes of creating a solution changed here in relation to who would drive the processes. First access2innovation were the main drivers of facilitation and getting partners involved. This led to an initial trouble shooting phase where it became clear that not all partners were really interested in developing a solution, but only to supply components to the solution[29]. Then one single human actor chose to take control and lead from

[29] A different field of research investigates the motivation of why actors in strategic partnerships attempt to work together. Alter and Hage (1993) submitted that there

there, and he did so with bracketing the problem as being more to be about action; i.e. something must be done, than he at the time had any technical idea of what to do next.

The ex post interpretation of this is that Jonas made sense of the events by understanding the process as something that needed to act. During the interview years later (Interview #17, see appendices) he expressed this as a matter of action and that whatever will work must be made and tried out. In order to allow for action to take place, as it were, Jonas claimed leadership and essentially took over.

The funds from ICI, which did emerge eventually, helped the budding company gain traction but Jonas also contacted other investors, but none of them showed interest in supporting development of a new unproven product.



Timeline 16: Sky-Watch

Note: It was in 2009 the company change to Sky Watch and Jonas took over. Sky Watch only became the official name at the end of that year.

The processes of enrolling funding were initiated early by the use of an artefact and market data provided by access2innovation that there was a significant market potential if a solution could be constructed (a noun based actor essentially, a document with statistics purporting the total number of NGOs and their purchasing power).

The actors applied to help this process of enrolling funding were business plans, budgets and return on investment forecasts. But the newness of the prospective business did not catch the attention of the (primarily) banks that were contacted (a reluctance that may have had something to do with the financial crisis, which was becoming ever more apparent at the time).

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are at least four typical motivations for seeking external partnerships; survival, cost benefits, resource dependency and institutionalisation. But interestingly actors in partnerships do not always have the same motivation, which could be a useful perspective for future research.

Jonas had tried different potential investors and ended up asking his own father, an experienced businessman in his own right, for a loan. But rather than offering a loan, his father also saw an opportunity and ended up investing in the company together with a local Danish business incubator, which joined the project when the DCA signed a letter of interest in buying 10 units if anyone would build a field-tested version of it. So, the sense making process here can be interpreted as being strongly linked to the potential customer signing a document stating that the product would be bought if it could be developed, and presumably an estimation was made that the product in fact could be made, which in turn could be surmised as a risk assessment (not uncertainty alleviation).

The enrolment of funding then cannot be unilaterally understood as something *only* to do with the business at hand, as the family relations could have played a part in it, but this is another field of study altogether. However, the letter of interest from a customer (DCA) is an actor that helped enrol other actors.

The DCA also stipulated that they would only cooperate if the attending partners acknowledged that none of them worked in arms or military trades as this would not fit with the social responsibility efforts of the DCA, and plainly be in direct opposition of clearing military landmines.

> Note: Again, a study of an actor is essentially *studies of actors*. The DCA stipulate contractual boundaries of cooperation, which in turn constrains the actor in focus. In other words, Sky-Watch cannot test the product in any way they would like, since a military test is out of the question. When Sky-Watch reaches the point of figuring out how to test it, the analysis of the actors and how they make sense of events and chose to enact this sense making, is really only understandable if all constraining factors are considered. Had research not been privy to the information that the DCA did not allow military testing (which is essentially an action of an actor), and testing commences, then the researcher might wonder why the actors did not attempt to have it tested in a military specified test facility as after all the challenge was to locate landmines.

With the financial resources in place the company Sky Watch was established in December 2009 with the company's first Board of Directors. The Board of Directors then decided that the company should forge ahead and build a prototype, which could be tested in the field, which in turn represented a reassurance that the business model leading into the involvement of investors was approved, and therefore was deemed "right". In academic

terms, the Board of Directors made sure that the involved parties were enrolled, on board and strove for the same goals (common point of passage). These were processes which are closely related to noun-based activities of budgets, plans etc.

For the business model to take shape a few professionals were enrolled into the company to help assemble the components, hardware and software, from sub-suppliers, as the entrepreneur Jonas had none of those skills. Jonas though was made CEO of the new company, in part because it was his idea, and in part because the major investor of the company was his relation (his father).

Noticing that the company would need to employ skills to develop a product, which the CEO and the Board of Directors did not have any knowledge about, was bracketed as a matter of hiring the right people for the job. And the "right" people for the job were assessed on the basis of the plans and budgets drawn up by the Board.

By both receiving acknowledgements from the Board of Directors, and also the hiring of people to bring the company to life, solidified the Business model even further, and effectively locked-in the direction of the company. Or in other words, the enrolment of actors – human and non-human – created a sense of purpose and direction (limiting focus – the processes become constrained). Or phrased differently; upon agreeing on certain aspects of what the company was supposed to do, where, when and how, the activities could commence.

The first phases of bringing an organisation to life then was based on activities of idea generation, prototype development (an artefact, not actual prototype), budgets, plans and from this funding was appropriated. The funding, the actors involved, the interests and subsequently the activities were meshed into Sky Watch and the product developments would commence. The processes were essentially processes of exploring potential solutions and blueprinting.

6.2.4 More changing perspectives

Despite the challenges in securing financial resources, Jonas managed to develop a prototype in parallel to formulation of the Sky Watch company. The prototype was tested both in Denmark and in Albania in cooperation with the DCA. The tests failed stupendously, as the helicopter in the first run simply fell down and had none of the qualitative characteristics needed for it to be commercialized, leaving Jonas with a sense of failure, and in his opinion the

failure was rooted in the now disproven assumption that the technology needed to create the solution the DCA was asking for could be rudimentary and could simply be assembled by existing technologies.

In other words; the processes of enrolling actors (non-human in the form of existing components that made of the new product) led to a prototype. This prototype was brought to a location where the partner (Danish Church Aid) was already in operation, in the hope that this partner would witness the progress of the company. As the word "test" implies, the process was indeed an experiment – a process of validation.

The intended product, it seemed, was much more difficult to develop and would require proprietary knowledge produced by Sky-Watch itself. It was a disruptive revelation leading to the business model being unlocked as it needed to be changed. In other words, the paradigm that had governed the processes so far, was found defunct, a time of crisis ensued and a new paradigm was found wanting. The company had enrolled actors (components) as imagined would fit together to form the product. But validation processes showed that these actors were not useful, so many of them were subtracted from the processes.

Hence a process of writing off the company's current business model was initiated, leading to a Board of Directors meeting where Jonas plainly laid out the sobering truth that they would have to start all over again. They would need to rethink their business concept and fundamentally control all the important elements of the business – in-house, as opposed to rely on outsourced resources. It had dawned on Jonas that the technology would require a much more focused effort on development, rather than just the assembly of existing technologies. During this business model transformation, the product was then coined a drone, and no longer a helicopter.

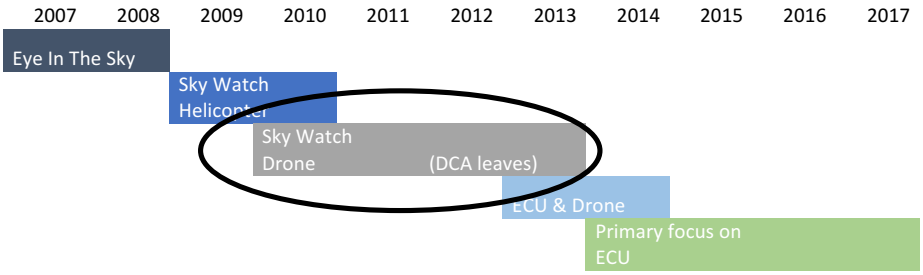
Figure 33: Drone flight
Source: Ravn (2012)

The processes of re-engaging the Board of Directors was for the CEO to speak plainly about the failures so far, and to rekindle the Boards interests. The investors had already invested resources but in an idea that turned out not to be viable, and then the company CEO was trying to convince them to re-invest but in a new idea. It was essentially a new beginning of the company. The CEO had changed the product – the manifestation of what the product should strive towards as the quasi-object. According to Jonas, he did not try to hide his lack of knowledge or skill with the technology he was responsible for, nor did he try to water down the failure of his actions (Interview 2013). His way of making sense of the situation is to deal with the whole truth of it, a truth gained through testing clearly showing that the initial idea does not work. Enrolling the board becomes a matter of presenting a noun-based actor – a fact, based on verb-based actors – experiments. Learning, as it were, had indeed commenced and the process of validation made it clear that something had to change.

6.2.5 Partnerships and changing perspectives

While this new business model (or paradigm) was being drawn up, the original partner and only customer the DCA started wavering in their commitment to the project. DCA claimed that they could not justify the development costs, which the need for proprietary software and hardware seemed to suggest, and also the subsequent projected higher unit costs (as the end product could no longer be assembled with existing technologies) when they are not even sure if it will work or not. If the product, they then

said, had only been tested rigorously by the military then there might have been a way forward (Ravn 2012). These processes led to the DCA leaving the project and left the letter of intent made previously as worthless.



Timeline 17: Sky-Watch

Note: The business model of Sky-Watch changed during 2010 from making helicopters to making drones, and it was during this phase that the DCA elected to leave the partnership.

In the eyes of Jonas this seemingly great shift in the customer's perspective on things: from a "you cannot be connected to arms trades or the military in any way" to a "we will only consider buying a product that has been tested by the military", left him with a rather large mistrust in the DCA as a viable customer and partner (he also stated that dealing with NGOs might not happen at all after this experience – interview 2013), and Sky-Watch was then forced to consider alternative applications of the drone, leading yet again to a new business model, which shifted the focus away from sustainability and soft-core issues such as those propagated by the DCA, to a strategy of company survival: i.e. the economic sustainability of the company.

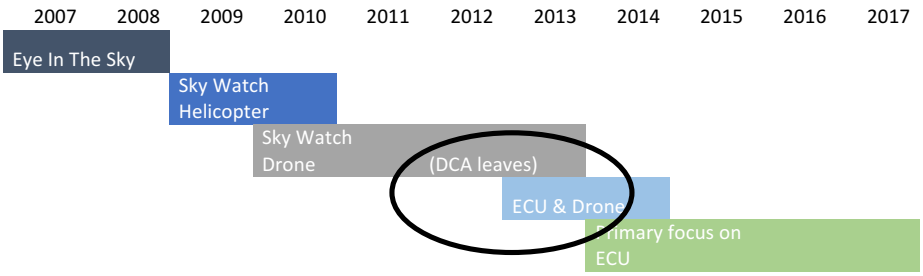
Figure 34: Sky Watch Pro1
Source: Ravn (2012)

The processes of sense making of the company were greatly influenced by external agency. This, some may interject, was always a possibility when the Sky-Watch company was putting all its faith in one single customer. For the company this faith that initially had led to a letter of intent, and now turned out to be worthless, led to a phase of complete removal from the original idea of mine-clearing, into *exploring* other options for the drone.

The processes changed in other words, from a relative certainty of the product's purpose and function, to a process of insecurity as alternatives were now needed. Essentially, the process of exploration into blueprinting from previous efforts, returned to a process of exploration.

The new customer segments in focus became organizations with greater purchasing power, but also industries that are not famed for sustainability, e.g. oil, gas and military. As Jonas regularly had to go to the Board of Directors again for additional funding he felt the company's progression was not at all as was desired, which in part attributed to the troubling fact that he spent incommensurable amounts of time trying to secure funding for the daily operations compared to the time spent on securing customers and finalizing prototype development (Ravn 2012). So, sense making to Jonas regarding how to run a company is a matter of creating a stable base of finance so that attention could be given to finding customers and creating the solution.

Or in other words, where the company spent some energy in enrolling funding, and not much in terms of enrolling customers as there was a paying customer waiting (DCA), now they suddenly had to expand operations into market development as well.



Timeline 18: Sky-Watch

Note: When the DCA was ruled out as representing a potential customer segment in 2011, it disrupted the company concept and business model and forced the company to look for alternative usage of the drone. It is around this point where the story of Sky-Watch as part of access2innovation changed and the action research ended. In other words, Sky-Watch were commencing on their own and the data henceforth is derived from the interview in 2013 (Interview #17 see appendices).

It is in commercial terms a significant element to any business when the intended goal of the company is to develop a product, which there in strict terms was not a market for – i.e. nobody was buying small high-tech drones at the time – and the company therefore had to *create the market*. The company in other words had to start organising their activities so that they could build a demand for their products – a different proposition for the company indeed. What was originally bracketed as a matter of creating a product, was now bracketed as a matter of *also* doing sales and marketing. The interests of the company had changed and so too would the actors and activities.

The company needed to go out and create an interest in their product, which meant getting potential customers to talk, go to trade fairs and other marketing and sales activities. This led to potential markets in windmill inspection, oil silo inspection and others. New actors (human and non-human) would have to be enrolled to deal with these new challenges. In a smaller note the skills of Jonas and his vocational training was fortunately sales and marketing, which allowed his focus to be more directed at these activities and product development was handed over to another key employee. The process then can be interpreted as enactment of sense making as something to do with skills. The organisation needed to divide activities so that people with certain skills should perform certain tasks, which is another way of saying that previously this might not have been a clear requirement. The processes of validation and the mounting responsibilities of creating a business with no customers must have made sense to the involved actors such that they delegated responsibilities more clearly.

From this new product development issues started, as with what the drone should be able to do, in what climates, size, battery duration, monitoring devices etc. The company was developing both the company and the product(s) at the same time. The product was still understood as a drone, and many of the components would be sourced, but with increasing awareness the company understood that the components for the most part would have to be manufactured or at least designed by themselves. And the software and the ECU (computing unit) of the drone were becoming increasingly important features of the drone.

6.2.6 Changing perspectives

A 3D-printer was sourced and experimenting commenced at a higher pace as new components could be created, fitted and tested (processes of validation included). Software development, hardware development, fitting, trials etc. were all becoming part of the company. With new designs and samples Jonas and others would start selling – even though the product had not yet been perfected. Jonas had learned that the process of getting customers interested and to finally close a deal, was a lengthy process. As such the company could not wait for the product to be finalised, before trying to obtain customers – it would have to be done simultaneously.

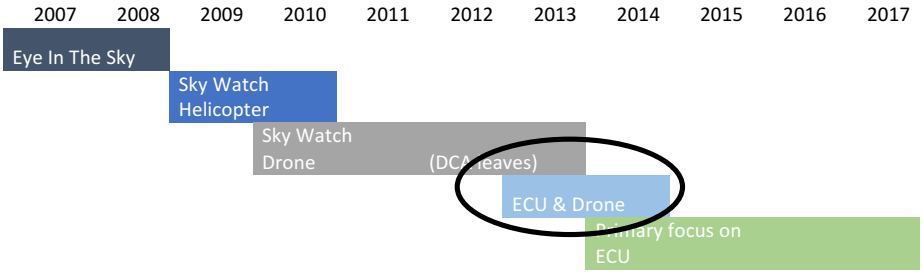
By attending many relevant trade fairs where the new envisioned customer segments would be represented, Sky-Watch learned of the very large weapons manufacturer Colt Inc., which seemed to have a use for Sky-Watch.

A partnership was forged some time later. The first partnership was spawned more by Colt's required Offset[30] obligation as a result of Danish military purchasing Colt products. The international scheme of Offset agreements was amongst other things, created to allow for a greater alignment between nations in arms development and purchasing. So, when the Danish government chose to purchase Colt products for a certain amount of money, Colt would have to reinvest and buy Danish technology or services for a certain amount of money. As Colt had still not met their Danish obligations, and Sky-Watch represented a niche product, and it represented something with potential application in Colt's portfolio, Sky-Watch received funding

[30] The USA stipulation of offset agreements:
http://www.bis.doc.gov/index.php/other-areas/strategic-industries-and-economic-security-sies/contact-the-office-of-strategic-industries-a-economic-security/offset-definitions

from Colt. (again, the study of Sky-Watch cannot be understood without understanding the actions of some other actor).

The partnership allowed for a greater development fund and helped Sky Watch to finalize their drone product, and on December 1, 2013, four years after the company's inception, the company had a sellable drone.



Timeline 19: Sky-Watch

Note: The partnership forged with Colt Inc. during 2013 finalised what was considered the 'drone' in December that year, but the partnership led to new opportunities and a closer look at the ECU that controls the drone and other usages of the ECU.

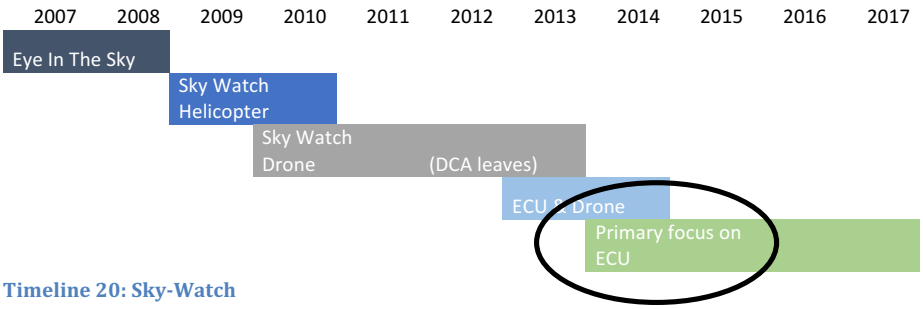
The processes that led to Colt getting to know of Sky Watch has not been clearly investigated, however it is known that the trade fair was the actor that facilitated the opportunity for them to meet. But the enrolment of each of the two parties seems to have been caused in part by Sky Watch' need for funding and customers and in part because Colt were not meeting their international obligations and also because Sky Watch to them represented something new. But particularly how, what or why Colt enrolled Sky Watch is not studied here. It is however clear that the partnership was viable because it was crucial for both of them - even though not for the same reasons. The process here can then be understood as two actors converging, not because of a common point of passage, but because of alternate, but compatible, agendas. It could be argued that Sky-Watch, not knowing that Colt Inc. had an outstanding offset agreement to fulfil, may have had only a small role to play in the matter. Colt Inc. did however have full awareness and might have been looking for some solution to sink their obligated funds into. But for the study here it does however show clearly if Sky-Watch had *not* attended the fair, Colt Inc. might never have heard of them and vice-versa. And a fair then becomes an actor that is enrolled, but with very uncertain outcomes. It is a process of networking and meeting other actors (people and technology) to find potential fits.

The (first) collaboration was time limited and when there was 6 months left in the partnership, Jonas spent most of his time at the Colt facilities in Canada to see if he could find other more interesting ways of creating more long-lasting partnerships with Colt. Jonas would roam the corridors of Colt to find some other link between the two companies. Jonas expressed (during interview 2013) that having a financially strong partner has been a blessing for Sky-Watch and allowed the company to really create results, and now that the contract was about to end, the activities of Sky-Watch would have to be scaled down and people let go. So, Jonas was very motivated in finding some sort of idea that could keep Colt as partners.

The processes of Jonas here can be interpreted as processes of learning. He set out to explore new opportunities and solutions, fuelled by a fight for survival. During the processes of learning, Jonas became aware of the value of the controlling device and the software of the drone, and actually not the drone itself. Colt, it seemed, had more applications for these items, than the drone.

And during these interactions with Colt, Jonas again had (according to himself) a disruptive idea; Sky-Watch's main competitive advantage was not the drone, but the ECU (the computer chip and control software) that controls the drone, which incidentally was the only component that Sky-Watch had created themselves. This permitted Jonas to consider if the Value Proposition of Sky-Watch might indeed be something other than drones, thus promoting yet another business model, as is the current model of the company (as of 2014). Jonas came up with an idea in the 11th hour, so to speak, and going to the final brief with Colt in relation to their existing and the then ending partnership, Jonas sat on the plane making a PowerPoint presentation showing his new idea. He presented the new idea and Colt created a new and longer-term development contract with Sky-Watch, by focusing not on drones but on the ECU.

The processes of Jonas were as mentioned highly motivated (survival – vis-à-vis crisis), but they were processes of innovation. He would walk the corridors of Colt, ask questions, observe and try to associate what he thought Sky Watch would be able to do, with what Colt was able to do, to come up with new ideas. Jonas did not know or expect his efforts to yield anything – he only hoped they would. In yet other words, the processes of especially Jonas were not based on fact, but judgment and sensing. He was not trying to find a drone shaped gap in Colt, where his existing product would fit perfectly. He went out with an open mind and tried to find new ways for his business to prosper. He in other words did *not* try to prolong the existing agreement, or stabilising the relationship between the two companies. He went exploring.



Timeline 20: Sky-Watch

Note: The observations, networking and asking questions by Jonas during the final months of the initial partnership Colt Inc. in 2014, led to the realisation that the drone might be the least interesting potential, and that the ECU had greater potential. This led to a stronger focus on the ECU and other potential partnerships e.g. Boeing.

The announcement of the renewed partnership between the two companies, led Sky Watch to later talks with other Multi-National Companies, and now e.g. Boeing is a partner as well as others.

6.2.7 Case in summary

What can be said of the processes of Sky Watch, and especially Jonas who is particularly interesting here, are:

- The initial idea generation phase led to an idea of a product
- Partners were enrolled, but most were later found non-participatory
- Jonas took the reins and started a process of enrolling funding through artefacts, plans, budget etc.

However, where the term uncertainty is concerned it is important to recognise that the company may indeed have started out in the context of uncertainty (e.g. Angola and the DCA), but withdrew from this context. But that process was also mired in some sort of uncertainty – an uncertainty as understood in trying to *create a market*, which did not exist. This of course is not precisely the same, but it is not completely different either.

What is interesting though is that the long process of creating a core product of Sky Watch has since (in 2015) led to a few sales of drones in NGO type situations in South Africa etc., but that does not take away the sobering fact that Sky Watch today cannot be a case of understanding what actors do when trying to create solutions in the context of uncertainty (uncertainty as defined

in this thesis). What is interesting though is that here is an actor (Jonas) who first notices an opportunity, brackets an idea as a helicopter, obtains a letter of intent from an NGO, fails in the first prototype, the NGO steps aside, Jonas then is forced to look for other customers in order to survive, finds along the way a partner with many resource to fund six months of development, then is forced to find a new way forward with the partner, finds it in the eleventh hour, a new partnership is forged and now NGOs can buy drones from the company; i.e. returning to the context of uncertainty. The path of creating solutions in the context of uncertainty then does not have to be linear (another field of study would call this 'reverse innovation' as the processes of working with DCA and Angola spawned new ideas, which were essentially fulfilled but not with the DCA or in Angola).

What may be learned from this is that commercial solutions to challenges in the context of uncertainty may be afforded, but maybe not always by starting with the end. The first iteration of this company was indeed to help solve a problem in Angola – the first business model. This was scrapped, and a new business model emerged with another focus and at some point NGOs, Angola and such were completely forgotten. And much later they ended up actually having a business model that could contain the original idea of the company (to sell drones to NGOs). The process of creating solutions then can happen through many business models, even business models that have nothing to do with the initially intended users or customers.

The actants of Jonas and Sky-Watch can be defined by the following:

- Processes of creating solutions are based on exploration.
- Then processes of blueprinting and enrolling funding.
- Once funding is on-board a plan is formulated, which instigates the development and testing phases.
- When tests fail, the company has to, again, explore new ways of surviving.
- This leads again to blueprinting.
- A multi-national business partnership is reached from which funding finally becomes a stable component of Sky-Watch – albeit for a specific amount of time only.
- When this funding is about to run out, a new phase of exploration commences.
- Leading to a new partnership and new blueprinting.
- Now the company has reached a point in time where the product that is going to be the focus of the company is well defined, through many different processes of validation and enrolment.

In other words, the processes of creating solutions are here interchangeable processes of exploration, blueprinting, enrolling funding, validation,

exploration, blueprinting, enrolling funding, validation, exploration, enrolling and finally a phase of product development and plans for scale are considered.

The main actors of the sense making processes of Sky-Watch are then:

- Exploration and innovation
- Experiments (validation)
- Enrolment of actors who inscribe attributes (blankness)
- Enrolment of funding

6.3 SystemTeknik

This case depiction includes many different situations as different actors come and go over the course of a few years. And also the involvement with access2innovation changes over time. The company's interaction with access2innovation at first led to a focus on a new renewable energy device, which was later found unprofitable. Then another access2innovation case was presented to the company, which they investigated further and later put on hold, as no solutions seemed to come of it. Then yet another access2innovation case was presented, and then the company started working towards developing a solution.

6.3.1 Introduction

The company SystemTeknik (www.systemteknik.com) was created in the 1950s and has specialized in electrical infrastructure solutions. In the course of the 2010s a strategy was developed to focus on renewable energy systems, as it was deemed relevant for the future of the company. The strategy was catalysed by an assignment of fitting Greenland based transmitter towers with solar powered hybrid systems, thus triggering SystemTeknik into the field of renewable energy devices.

When developing the strategy for the company, and combining the already established partnerships in Ghana (not with renewable energy in mind), the company CEO had, with the approval of the Board, chosen to investigate opportunities for other African ventures. And the reasoning was based on the idea that renewables were in greater demand in poorer countries, simply because of the lack of available grid power, coupled with an increase in demand for sustainable sources electricity.

This, through intermediaries, led to the company joining in on one of the access2innovation seminars on renewable energy opportunities in East Africa.

6.3.2 Beginning of partnerships

The access2innovation organization had in the first version (2007-2011) worked with Danish Church Aid (DCA) to find different solutions related to landmine clearing efforts in different trouble spots of the World; e.g. Angola (as with the Sky-Watch case above). One of the other tasks was to find a solution to the energy challenges of operating a moveable mine clearing camp

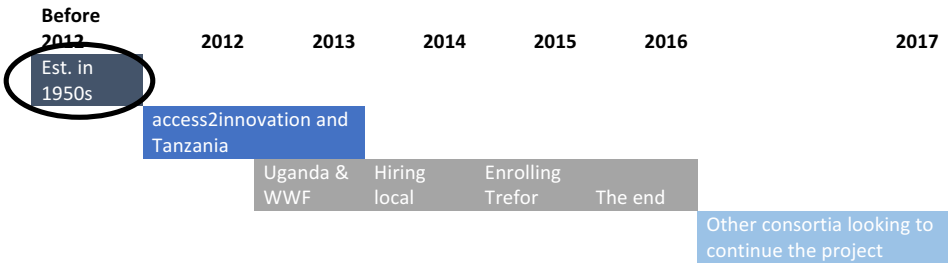
in rural areas with poor or non-existent energy infrastructure or logistics. The DCA activities were at times completely halted, because they could not charge their metal detecting devices due to the lack of diesel for their diesel-powered generator. The same lack of supply of diesel could also mean that the cars could not move either.

With access2innovation they wanted to look into a transportable renewable energy device of sorts. The task was not given as a matter of course, as renewable energy on the scale that was needed, was typically solutions that were installed permanently on houses or factory buildings. But the DCA needed a solution that could be moved around from location to location (SystemTeknik had not entered into the picture yet).

The Renewable Energy Generator was taken on by a researcher at Aalborg University who concluded after 18 months of trials that such a device could technically be built, but because the solution was created with no real relation to whether it was possible to sell or not, the project was halted as time and resources had run out; i.e. the technology was possible, but at too high a cost.

During an access2innovation renewable energy seminar a year later, where different energy opportunities were presented to Danish companies looking to latch onto such opportunities, the Renewable Energy Generator idea was also presented.

In the course of the following weeks of talks with companies (Field Notes + recordings of the meetings), SystemTeknik were asked if they might find the generator interesting, which they did and the partnership with access2innovation was formalised.



Timeline 21: SystemTeknik

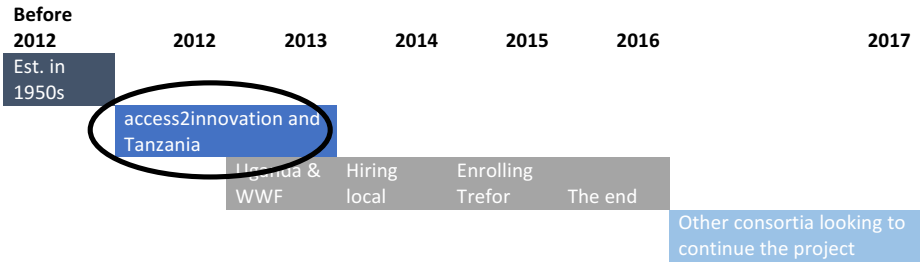
Note: SystemTeknik is a well-established company dating back to the 1950s. Different projects were tried out with access2innovation starting in 2012 first with a new generator idea carried over from access2innovation 1.0 and later visiting MS TCDC in Arusha ending with a project in Uganda with the WWF.

6.3.3 The renewable energy generator

The initial meetings with the company and access2innovation included discussions of past experiences of both organisations, about what the company had in mind, the ideas of thinking in business models as opposed to products.

During one of these meetings the CEO made it quite clear that the company had no visions of quick return on investment, as they knew that it would probably take the better part of five years before they were in a position to do any sort of business – a business that not only was directed at new markets, but also had a focus on, for the company, new technologies (renewable energy – i.e. the company was attempting to work with actors that were largely unfamiliar to them, leading the company to allowing themselves a five year learning cycle).

The company in other words did not believe that it would have any performable commercial business venture in the foreseeable future, but would spend the forthcoming years learning of the markets and building networks; a process that they had learned the hard way in relation to their operations in Ghana where the company, although not directly in operation in Ghana but worked with a partner who was, found out that things took a long time to work. The process of obtaining the approval from the Board of Directors of this strategy (which was not the only strategy of the whole company of course) included forecasts, budgets and plans.



Timeline 22: SystemTeknik

Note: SystemTeknik had before talking to access2innovation in 2012 had internal meetings outlaying the perspectives of finding renewable energy solutions for places such as Sub Saharan Africa.

Whilst the company contemplated its ideas of how to deal with the energy generator they had inherited, this researcher contacted them to learn if they

might have any interests in taking on students as part of the students' internship and/or thesis work. This was a good idea it seemed, and the process of finding primarily a student with renewable energy knowledge was initiated, as well as finding a student within the field of industrial design. The solutions that these students were envisioned to tackle were in simple terms:

- a device (the renewable generator) containing many forms of renewable energy technology was to be created, thus the company needed someone with knowledge of such technologies (the content of the device)
- the generator itself would be put to use in a setting where there were good chances that the user (e.g. an Angolan citizen) would have no formal training, no instruction manual etc., which is why the user interface would have to be such that there were no doubts about what plug, button or other does what. Therefore, an industrial designer was envisioned to handle the shell of the generator – the user interface.

An energy student at University College North (UCN) in Aalborg, Denmark was enrolled, as was an industrial design student at Aalborg University (AAU), and these two, despite studying at quite different research institutions, worked together for the company.

In a process perspective, the following had thus been identified:

- The company had decided to move into a new business field (unknown actor).
- Going to places where the sun shines and where energy is in great demand such as Sub-Saharan Africa seems the sensible thing to do; i.e. there would be markets probably more willing to purchase the company's products than in Denmark.
- From past experience, learning how to do this will take time (they need to learn over time).
- The board approves the plan and funding for 5 years.
- The CEO knows that he and his company do not really know anything about renewable energy, so they choose to enrol someone who might – an energy student.
- And the generator would have to be operated by anyone so another student, industrial designer, was enrolled.
- The main actors then are the prototype generator, funding and plan approved by the board, two students and the CEO.
- The less obvious actor that seem to govern all others, is the realisation that all processes were learning processes, and activities were organised with this in mind.

The process of creating the product was based on the prototype developed by the researcher mentioned earlier. The two students were enrolled in their respective fields of study, to figure out how the prototype could be improved. In terms of the content of the device one student attempted to see if some other combination of existing technologies, and maybe also existing SystemTeknik technologies could be utilised – primarily with the intent of bringing down the cost of the device. The design student attempted to see if the existing user interface could be improved, and also to confer with the energy student if and how other devices would be included and how that might affect the exterior design.

One meeting was setup between the energy student, who by then had graduated and been hired fulltime, and this researcher. He said during this meeting (Field Notes) that he was a technician with even limited experiences of that, and that he had no real business knowledge. But he was given the responsibility to consider business aspects of the different technologies the company was working on. But in all this he had no one to talk to about the business perspective, so this researcher was considered a valuable sparring partner. The employee in other words recognised a shortcoming of his, and enrolled someone to help him.

The short conclusion of the Renewable Energy Generator though was that it was found quite difficult to manufacture profitably, and was put on hold with no plans to resurrect the project.

In a process perspective, the company centred its attention on an existing technology. The prototype was the entity from which developments would continue, and the prototype and idea that led to it, was the enrolling object to attract students to work on it. The ethos of letting students look at the device, rather than the company internally handling it themselves, was not investigated.

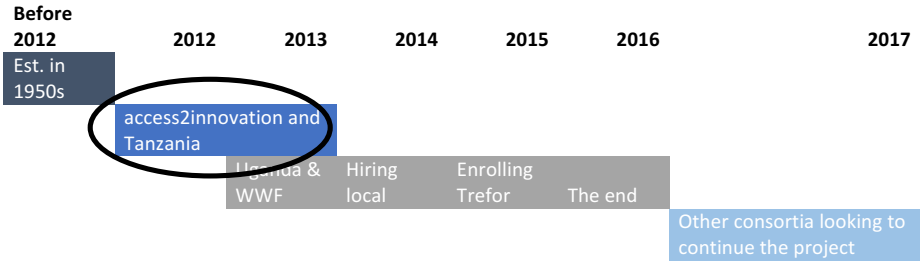
However, in a process of making sense of this new technology the company attracted actors whom stood a chance of understanding it, and the students in question would bond their learning with the company by trying to utilise existing components made available by the company. The company could then benefit from having what would seemingly be knowledgeable skilled people to make the initial findings, and do so without much cost to the company. Even though the prototype and the product it was hoped it could be, turned out not to be viable (as a process of validation, although only internally as the product was deemed a very long way from becoming cheap enough to market), the product was shelved, but the intelligence of how the technology worked was retained as the energy student was hired by the company (as mentioned earlier). The process of enrolling students then is a

process of attracting new capabilities, building them at relatively low cost and retaining the capabilities after a time. The students' tasks were fundamentally that of blueprinting. The explorations had been conducted by access2innovation and the DCA, and a prototype had been blueprinted and also constructed. But a new prototype was needed and that was the task of the students, but was, as mentioned, shelved when found unprofitable.

6.3.4 TCDC, Tanzania and energy challenges

At *the same time*, as the company was looking into the renewable energy generator prototype, access2innovation was looking into e.g. energy challenges in Tanzania and Uganda, and the case related to MS ActionAid (a Danish/British NGO, the same NGO that Remote Sanitation visited se case above) and its training facilities in Tanzania came about.

One of the challenges at the training centre in Arusha was that the grid-based electrical power was of such poor quality, which led to quite troublesome spikes in energy bursts throughout the grid, which meant that sometimes the smaller electrical devices would fry up; e.g. Wi-Fi routers could not survive electrical currents over a certain level and would melt its circuits if it did. The training centre then asked access2innovation to see if access2innovation could find businesses that might have, or could create, solutions that would be run by renewable energy, because the cost of replacing these devices was both costly in money and time.



Timeline 23: SystemTeknik

Note: SystemTeknik were still looking into the generator idea in 2012, but had mind to look at other opportunities, which led access2innovation to invite the company to Tanzania to visit the TCDC centre to look at some energy challenges there.

SystemTeknik were interested and agreed to go to Tanzania to talk to the people at the training centre and discuss solutions, and also to see what other opportunities could be found in and around this area of Tanzania. The

processes leading up to this event from the view of access2innovation was that the facilitators had bracketed what had been envisioned as the challenge faced by the customer and also how that might fit SystemTeknik. The processes did not include artefacts as such, but access2innovation did attempt to enrol SystemTeknik by showing how they might deliver value profitably, in part due to their technological know-how from making the solar powered solutions in Greenland and in part because a case was made by access2innovation that other potential customers would be reached if the company would succeed in delivering a solution to this Tanzania based customer.

In turn SystemTeknik offered to take a look and invest time and resources in talking to this potential customer in situ.

The travel plan was for the CEO of the company to go, and the newly hired employee (energy graduate from UCN) also.

During the meetings that were held *prior* to the trip to Tanzania the CEO showed proactive ideas of considering new ways of selling products in Africa, e.g. to recoup investments by selling electricity and not selling the electrical devices or products – a new perspective of the business model of the idea. So SystemTeknik had considered themselves like small energy utilities companies. Other ideas were also shared.

These meetings were essentially processes of innovation, and nothing ever really was pinned down, locked off or secured. Products, business models, contacts etc. were all discussed back and forth. They were processes of exploration, and so too would the trip to Tanzania. The company in other words were experimenting with different actors.

During the time, up till organising the trip to Tanzania, access2innovation and SystemTeknik were also involved in different discussions about what other opportunities could be explored. One of the meetings the CEO was asked directly if the company had any intention of applying for the funds made available through access2innovation, and he said that they were really not interested in funding, but interested in *the access2innovation network* of contacts (Field Notes). The argument was in part that the apparently meagre funds available to companies through the access2innovation program were worth less than the network of contacts. The purpose of the company then could be stated as being related to the value of gaining access to contacts (for the purpose of enrolment), rather than to help finance the development of the technology that would hopefully emerge. The network of contacts is the quasi-actor of the company – the actor that draws the company to access2innovation.

In a sense making interpretation, the company seemed to act as if the relations to others were more important than the technology or product. It was the relations that would eventually define the solution. It was *not* a process of building solutions in Denmark and shipping them to Sub-Saharan Africa and then see who (relations) would buy them.

The contribution to research here is clear, probably clearer than most other identified activities of actors in this thesis: The model of Blueprint to Scale, through blueprinting, validation, prepare and scale as presented by Koh et al (2012), includes a simultaneous process of **Network Relation Building**.

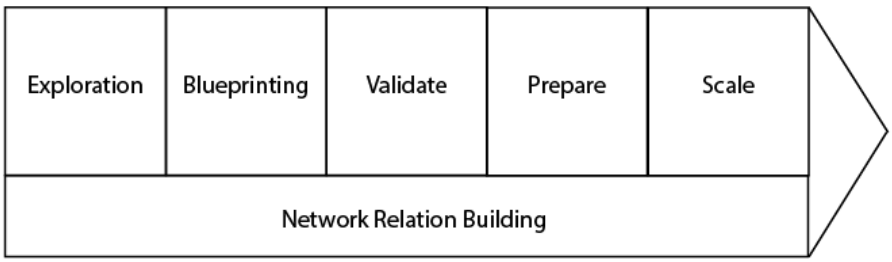


Figure 35: Process of creating solutions
Source: Adaptation from Koh et al (2012), including Exploration and Network

So, to the CEO of SystemTeknik the existing network of access2innovation made sense to tap into, *in order to build own relations*. And the actant of the company, as will become apparent, is that the Network Relation Building processes happen both in relation to the development of specific solutions, but also happen as a matter of forming new relations with no apparent applicability – processes of exploring contacts and building a network of relations.

The company did however apply for access2innovation funding eventually, simply because funding was available and they found it prudent to take advantage of it.

6.3.4.1 Going to Tanzania

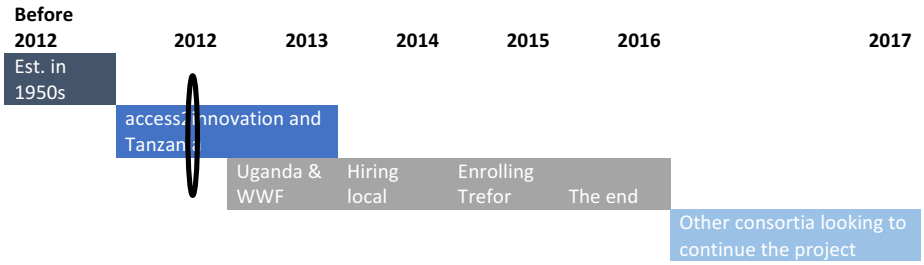
Note: This section is afforded a more detailed depiction of events, than the rest of the case depiction of this particular company, as this researcher has followed and was part of these particular processes, and can therefore report the events in greater detail than perhaps many other parts of this case. A different graphical timeline will be used to highlight what happened in Tanzania on a day-to-day basis.

But the detailed depiction is also pertinent as the story unfolds in a way that is very relevant for future events and how research may come to learn how actors create solutions in these contexts. The particular interesting element is the process of validation, and even very fast processes of validation at that (taking minutes or hours, not days, weeks and months).

The trip was based on access2innovation partner MS ActionAid and their training facilities in Arusha and Dar es Salaam, as the NGO have made it publicly known (through access2innovation) that they sought new energy solutions (which was the same background of events that led Anders and the Aquaplaning/Remote Sanitation project to Tanzania). The MS ActionAid organization were experiencing troubling energy prices and poor quality of energy availability (as with the aforementioned small energy devices melting down due to bad power), making it increasingly untenable to run their facilities – especially boiling water for drinking.

Organising the trip was this researcher's job, and only this researcher of the people in access2innovation would go on the trip (and two other Danish companies would also attend the same trip but with other agendas entirely).

The program was organised such that the morning meetings would be for everyone to attend, and the afternoon activities were loose and open-ended, so as to allow the visiting companies opportunities to be opportunistic and go meet with whomever they found to be interesting. Some of the planned activities included visiting other organisations that were thought to suffer from energy problems; e.g. schools, hotels. In other words, this researcher had scheduled some events that were thought valuable (predetermined meetings were noun based actors of sorts), but left the other half of the day open for exploration (verb based actor).



Timeline 24: SystemTeknik

Note: At this point in the case we are about to visit Tanzania in 2012. The following part of the story will use a finer timescale to show what happens, as an example, of what happens over the course of two days. And this is to highlight the fast iterations of the company.
During the visit SystemTeknik learned that the MS ActionAid facilities had little accurate knowledge about their electricity consumption and waste, leading SystemTeknik to suggest that they fit a range of metres and measuring devices so that finding energy solutions could be attempted with better knowledge of what electricity usages there actually were. This process is an example of the actor viewing the challenge (SystemTeknik) faced by the potential customer (MS TCDC) from a bracketing perspective – in other words – the challenge was isolated to only be about one particular aspect of the larger energy challenges of the potential customer. The customer, in this instance MS ActionAid and their training centre TCDC, may not have bracketed the view of energy challenges similarly, which will be detailed later.

The NGO manager was interested and SystemTeknik tried to suggest (whilst still in Tanzania, but also upon returning home to Denmark) different solutions, as it would turn out to be difficult to find a viable solution. And the crux of the problem of creating a solution to the NGO was basically:

- The cost of the technology (the metres and measuring devices) was too expensive to be grasped by the budget limits of the NGO (they were and are still structurally not flexible enough to move funds around due to their deliverables to funders and the Danish Government that require them to behave in a certain way). In plain terms – the product was too expensive. This then was not a 'solution'.
- Next SystemTeknik (the CEO and his employee) considered other options and tried to come up with innovative ways of getting the NGO to purchase the company's technology, and suggested that the NGO pay over the course of 18 to 24 months in instalments, even without interest rates, but the NGO said that they were prohibited by the

statutes that govern them to make financially binding arrangements that reach over 1 year.
- The company then suggested that the NGO only pay what they can, as calculated by the money they would save from the technology in energy consumption (i.e. to pay the money that they saved, so if they saved 1.000 shillings in a period compared to the same period last year, then 1.000 is what they would pay, thus not overreaching their budget), but that 'solution' was not covered by the existing statutes of the NGO, which required further investigations.

SystemTeknik were essentially willing to bend their own practices to suit the customer, but the customer was not willing or able to bend with them.

Some of these potential solutions presented by the company came about over minutes and hours, and not days, weeks or months. The people from SystemTeknik would take input from the potential customer, see a problem, suggest an innovative way to work around the problem and continue this type of process repeatedly. The processes of sense making are fast progressions of asking: "What is going on here?" to "What do I do next?". They are processes of experimenting with new ideas and validation where the actors attempt to create new solutions and validate them immediately with the customer. SystemTeknik are effectively co-creating a solution with the customer in situ. They are creating innovative actors (business models) in attempts at enrolling the customer. The processes are *not* about collecting data, then going home to figure out a solution, returning with the solution to show to the customer and expect the customer to agree. They are testing solutions (experimenting with actors) not long after being presented with a problem. In other words, the processes are fast interchanges between exploration and blueprinting, with processes of enrolment and validation of solutions.

SystemTeknik had explained that they were interested in getting their first hands-on experiences in East Africa, and they did not want to give away the technology for free, partly because they were unsure of how secure it would be for the company to partner with someone with no strings attached, and also the company wanted to minimize risk in general. So, the company were fine with not earning money, but were not fine with giving away stuff with no guarantee that they would gain something – which in this case was primarily experiences. By operating SystemTeknik technology in a reputable place like the MS TCDC centre, the company hoped to use this relation to forge other relations (enrolment) with other potential customers. The process of the company then was *not* a short-term profit seeking exercise, but a relation building effort (networking) from which to expand operations to other customers in the region. By learning how to build one relation, they could

learn to build the next, by showing the community that a viable technology provided by SystemTeknik was available and added value to the customer, the company could hope to enrol other customers to come visit MS TCDC and see for themselves. SystemTeknik were essentially creating an artefact to that would portray a version of what the company is able to deliver, from which to enrol others.

TCDC however did or could not, accept the offers of SystemTeknik and the relationship ended, despite the company's efforts in trying to come up with new ideas – even ideas that meant that the company would not earn anything from the transaction, but only gain some sort of foothold in the market to learn and build from.

These are the main steps that were taken during two days of visits to the TCDC in Arusha, Tanzania.

Day 1
Examined the energy control devices at TCDC
Found them to be insufficient in estimating the actual energy consumption at the center.
Action: During evening hours, the company tried to estimate what devices could solve the problem.

Day 2:
Solution presented to TCDC: Fit meters and measuring devices.
Pros: Such technology is familiar to the company and TCDC acknowledged that accurate energy information would help in future decision making.
Cons: TCDC were unsure about paying for it.

Action: The company set about trying to find an alternative model by which TCDC could pay for it.
A couple of hours later a **solution** was presented to TCDC: TCDC could pay installments.
Pros: It would alleviate the need to have money available up front.
Cons: The installment plan would reach into a second fiscal year, which TCDC could not do.

Action: The company again had a think about what to do. Decided that having a customer in Tanzania, even one that did not earn the company any money, was worth building on.

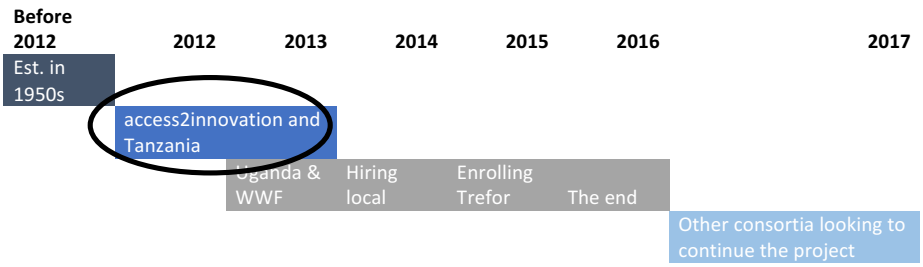
Solution: The company offered TCDC to pay only that which it saved in energy consumption, in that way TCDC would not overstep its budget, and when these payments

reached the total amount of the bill, they would have concluded the transaction.
Pros: It would seem to fit TCDC's strict financial arrangements with the Danish Government.
Cons: TCDC did not think so.

Looking back at the events TCDC and access2innovation had formulated (bracketed) the idea for energy solutions as for example small solar powered Wi-Fi routers, which would void current grid powered problems. The SystemTeknik company however, did not go to Tanzania just to fulfil this task – they went with the objective of creating a platform from which they could build their business. So, the actors, their interests and their activities (meshing) were directed at something else, but not different than what access2innovation and TCDC were utilising as enrolment. In stricter terms the access2innovation and TCDC efforts of trying to create some sort of quasi-object did catch the attention of the company, but the purpose of the company was to *do more* than that. In other words, there was a gap in sense making of access2innovation and TCDC at one end, and at the other the sense making as seen by the company.

Essentially the concept of what was going to happen and why was not aligned.

The collaborations with TCDC then ended, but it did not stop the company from pursuing other opportunities in Sub-Saharan Africa. And now the case unfolds in a wider timeline again.



Timeline 25: SystemTeknik

Note: At this point in the case, but still during the trip to Tanzania in 2012, the company is no longer interested in TCDC, and have arranged to meet other NGOs and others in Arusha as well as Dar es Salaam, Tanzania.

During the company's first visit to Tanzania other meetings were held, also with another NGO, which incidentally lived next door to MS ActionAid – an NGO called ADRA. That meeting spawned a relationship, which still exists today, but the details of what the purpose of the relationship is supposed to

lead to, is still uncertain as of writing this thesis. But the CEO expressed (Interview 2014) that they do talk to each other from time to time, especially as ADRA are present in many other countries and that might have some scaling benefits. The processes of engaging ADRA could be described as processes of enrolment, but not for very specific purposes (at least as best as can be understood from the data). ADRA were essentially potential customers, but so too was TCDC. The difference it seems, but has not been documented, is that ADRA seemed to be able to move with the company, where TCDC seemed not to be.

SystemTeknik also had meetings without access2innovation representatives present, and the findings of these meetings were not shared, although one story was. The story relates to the hotel accommodating the participants during the stay in Dar es Salaam, Hotel Slipway, which is a high-end facility. The company CEO and the employee had by themselves wondered how the hotel could keep electricity up at all hours of the day, with minimal fallout. And this despite the obvious grid-power cuts that happened every single day.

They found the hotel operations officer and learned a few different things:

- The hotel had one massive diesel generator in the lower basement of the hotel, which meant that no one would be able to hear it on ground level.
- There was a second redundant generator too so that if one failed the other could take over.
- Recently the Tanzania Government owned Utilities Company (electricity, water, waste etc.) TANESCO had moved the electricity meter of the hotel to the other side of the transformer station. What this means is that the hotel is to pay for electricity that goes through the meter, before the electricity goes through the transformer station where it is led into the hotel. The problem is that transformer stations incur vast amounts of electricity waste due to the transformation from high-voltage to low-voltage, but the hotel would essentially have to pay for that loss as well.
- Fuelling the diesel generators were becoming increasingly difficult, in part because of the rising prices of diesel, the poor quality of diesel and because of the poor quality of diesel the increasing maintenance costs of the generators.
- The problem of quality of diesel, the manager told SystemTeknik, was in broad terms about corruption: the diesel would be ordered, the transporter would be filled up at a filling station just outside of town, the lorry driver would drive and pass by family and friends who needed diesel and to anyone who would pay for it, top up the transporter with water to replenish the diesel that had been taken

> out, and the hotel would receive this diluted diesel. And the hotel had nothing they could do about it.

The process of the company (SystemTeknik – not the hotel) here is that they investigate matters that are a source of wonderment. Hotels were at the time not deliberately sought out as potential customers, but the company did not rule them out either. So again, the company moved out of its initial concepts and started looking for alternate sources of knowledge, which could potentially turn into a business opportunity; i.e. processes of exploration.

SystemTeknik came home after the Tanzania trip and despite not begin able to find a solution for the MS ActionAid energy problem, they came up with one other potential solution, which MS ActionAid also dismissed. So SystemTeknik were starting to look for other opportunities, as it seemed less and less likely that a viable relationship between SystemTeknik and MS ActionAid was possible.

6.3.5 WWF and the Energy Hub

When this researcher was delving into Tanzania and the challenges of MS ActionAid the remaining access2innovation staff were exploring other potential projects in Uganda.

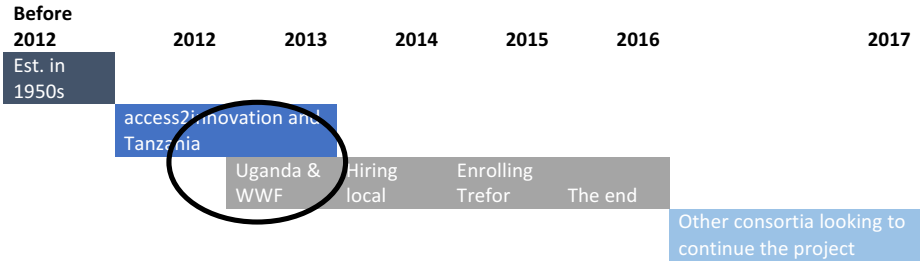
In particular, the emerging relations between access2innovation and Danish Red Cross (DRC), and later International Red Cross (IRC), and also the World Wildlife Foundation (WWF) were giving birth to new projects. One of these considered a new take of renewable energy solutions for the regions far from the main capitol of Uganda (details of this project and others are available at www.access2innovation.com).

In Rwenzori, which is one of the regions in West Uganda bordering with Democratic Republic of Congo, the region capitol Kasese had made a bold project with WWF. The project is a Champion District project, which means that the district is going to champion a new idea; an idea if they could get it to work, that would be scalable to other communities as well. The great objective of this project was to have this region become carbon-neutral by 2020 to show that rural communities could indeed develop to become environmentally sustainable. The WWF supported this project and have helped raise funds for it.

The WWF could also gain entrance to the local municipality and the decision makers there; access that SystemTeknik and other companies would otherwise find difficult to obtain. WWF would also be able to enrol local

communities as they have many experiences in doing so – this too would be challenging for a company like SystemTeknik.

During discussions between WWF, access2innovation and SystemTeknik (and others) a few different ideas emerged.



Timeline 26: SystemTeknik

Note: At this point in the case we are back in Denmark, and the company was gathering thoughts and ideas for Tanzania, including ideas with the other NGO they met with there. But none of it was amounting to anything concrete, which is likely the reason why the company would like to hear about the other access2innovation projects in Uganda – particularly the energy project with the WWF.

Another note: Please observe that access2innovation staff up till this point has almost entirely been sitting on the side-lines whilst SystemTeknik did what they did. The access2innovation staff may have facilitated the contacts to MS and others, but the activities conducted by SystemTeknik were entirely of their own making. No interference or consultancies or tools or knowledge by the access2innovation facilitator impacted these particular proceedings.

SystemTeknik had at some point considered creating an off-grid energy solution where local small businesses and citizens could gain access to energy in affordable ways. The initial idea of an off-grid power solution had emerged at an unidentified point in time, but to the best of the knowledge of this researcher, the idea had been part of the company's range of possible outcomes, from the beginning of the talks with access2innovation (or quite possibly something they had thought about even before that), which could suggest that SystemTeknik had exploratory meetings at home where they would try to come up with different ideas.

SystemTeknik had their ideas but needed to learn more about what solution might work in Uganda together with the WWF, and the processes included doing some own idea generation, discussing the ideas with WWF and also

going to Kasese in Western Uganda to talk to stakeholders, the municipality of Kasese etc. The processes here were again of exploratory nature and a mixture of deducing from information and induction through interaction with others. The company essentially tried to co-create knowledge with local stakeholders so as to try and develop a solution through interactions. And the processes thereby also included phases of validation, and interestingly they were phases where no real artefacts were available.

But as the CEO of SystemTeknik stated later (Interview #21, see appendices) the processes were not smooth or effective. The company had to make up their own mind at times and brought in ideas that they would attempt to relate to local stakeholders to assess if one or the other solution would be possible (validation prior to implementation). Some processes were very difficult indeed, such as obtaining land permit to erect the new prototype (an energy kiosk). But through working with the WWF and this organisation's access to and knowledge of local decision-making processes, the company at least fared relatively smoothly compared to if they had done it themselves.

When returning home to Denmark the company had processes of business model innovation, where different ideas about how a solution could look like.

During the processes of arriving at potential off-grid energy solutions to be installed and used by locals in Uganda, the company identified a technological component that would be needed, but something that they had no knowledge about; a system for payments.

When customers would come to the energy kiosk they would have to have some sort of payment in place. Looking through the different teachings from research the company was recommended to find a cash-less solution, as the flow of cash becomes a problem with crime and corruption. But an e-payment solution would mitigate most of such issues. But SystemTeknik did not have any knowledge of this, and asked access2innovation about it. Again, this is a process started by an acknowledgement of a short coming (lack of skill or knowledge) that lead to the enrolment of help. Reaching out, as it were.

Coincidentally access2innovation had talks with 'Pay e-safe'[31] and this led to a partnership between the two companies. The processes here were a clear case of the actor noticing a problem, and recognising that they themselves would not be able to create a solution for it (they in academic vernacular did *not* bracket the problem – they rather would have external agency to help solve the problem). So instead they turned to access2innovation (but they

[31] http://pay-e-safe.com/partners - which is a budding company started specifically to address the problems of cash related corruption in places like Sub-Saharan Africa.

might have accessed other relations for the same purpose) to see if some other solution already existed. As it turned out another project in access2innovation dealt with this exact problem, and collaborations started to form. Pay e-safe were happy to gain a potential customer, and SystemTeknik for no investigated reason chose to work with Pay e-safe.

When the actors involved signed a Terms of Reference and a Memorandum of Understanding, SystemTeknik considered erecting an off-grid solar energy solution in a kiosk type situation; i.e. would build a working prototype in Uganda and learn.

Locally trained people would operate the energy kiosk, and they would manage the selling of energy to customers, either through direct power supply or leasing of batteries. The idea was that this small kiosk would be able to raise enough money to pay for the installation within 18 months, after which the community would own and run the installation by themselves, and SystemTeknik would have created a new market for its products. The business model was based on the fact that locals would otherwise not be able to pay for the solution up front, but that they would be able to pay for something over time. In there were also the considerations that locals would not have to walk far to charge their phones, thus giving them extra time to spend on more value adding activities. The idea of the company carrying the financial risk of the installation until the users had paid for it over different instalments was the same sort of logic the company had tried to show the NGO in Tanzania (but without it becoming a reality). From the company's perspective, the ideas of becoming something quite different from what the company had previously done (they were essentially technology manufacturers, and mostly sub-suppliers at that), to a company that also had to function as some sort of financial institution. But the company did not seem fazed by this seemingly great shift in business model, but it did eventually turn out to be a larger issue, as will be elaborated a bit further on in this case depiction.

The processes of securing permits, a plot of land, planning and dimensioning the technical solution etc., were in the hands of the still rather new employee from UCN, but his skills were primarily technical and had little insights into commercial matters. Subsequently a fellow of Indian decent was hired by SystemTeknik due to his knowledge about renewable energy in low-income communities, and because he had university degrees in both engineering and business. The enrolment of this resource was determined by investigating the optimal characteristics of what was needed (the company had realised that technology was one thing, but business is another, but finding a candidate that was skilled in both areas would be ideal), and a recruitment process was performed to choose between different applicants. The hiring process in

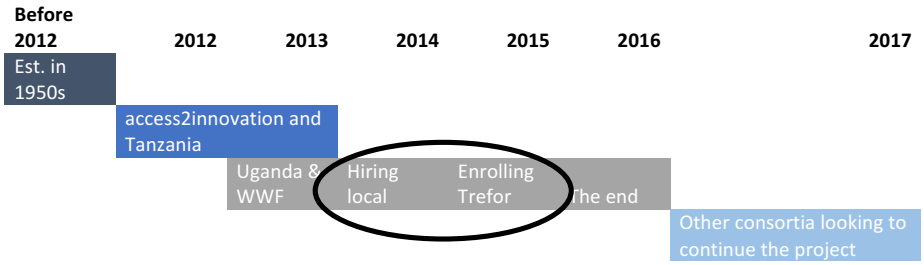
other words was professional, and could be interpreted as something that has been a common process of SystemTeknik through the years.

The chosen applicant was then put in charge of getting the first installation up and running in Kasese. He would reside in Denmark and go back and forth to Uganda as needed. The idea, the CEO of SystemTeknik said (Interview #21, see appendices), was that the WWF partnerships *should* allow the company to work from Denmark. But it turned out that the SystemTeknik/WWF partnership was not what the company had hoped; i.e. the company had envisioned that WWF would be more hands-on, and could do some of the things *for* SystemTeknik. But soon it became obvious that WWF were not equipped to do the company's biddings. So SystemTeknik elected to take their new employee and station him in Kasese for two years, so that the company was present at all times and could control the processes by themselves, and gain first-hand knowledge (learning). The sense making process here is maybe not clear, but it would seem that in the event that WWF were not the partner or relation that the company hoped, instead of trying to change the behaviour of the partner, they must have thought that it was easier/better/more cost effective to invest in stationing their own employee to do the work. One might say that from the perspective of WWF the partnership with SystemTeknik had not changed, but from the perspective of SystemTeknik the partnership had. Another speculation could be that SystemTeknik do not believe in *short cuts* if validation proves there isn't one. WWF seemed the optimal partner as they were present in the market, but that was not a role they could take on. So, SystemTeknik accepted that they would have to do it themselves despite the added costs. There would of course be benefits to the investment, e.g. shorter lines of communication.

Note: These processes of sense making and enrolment are relatively swift and progressive. Some sort of issue emerges, actors are enrolled, ideas are experimented with and conclusions reached. New plans, realisations – even painful ones – are reached, and the company forges ahead.

By having someone on the ground the company was able to create its first installation, launch it, start monitoring if it would actually be sustainable and deliver that which everybody hoped it would. The process of creating one solution in one context was defined by the acknowledgement of the company that they must validate if their idea could work in reality (validation through enactment). So instead of making all the plans and simply implementing them, the company chose to place a dedicated worker in the context for a planned two years, where this employee would co-develop a solution with the local community, and essentially enact the ideas. The processes were therefore designed *not* to depend on a certain plan or schedule, but for the processes to evolve as the participating actors learned over time. Actors

would essentially be added and subtracted over time, which would hopefully lead to a viable solution, which would then be scaled to other communities. And crucially the planning of activities *allowed* for the adding and subtracting of actors over time.



Timeline 27: SystemTeknik

Note: An employee was put in place during 2013/2014 and a prototype was being put together. Whilst this was coming to fruition, SystemTeknik had talks with Trefor – the energy giant – about funding a dissemination of the energy kiosk across Africa, as the following describes.

When the prototype of a solution was being installed and run for the first time, SystemTeknik started seeing opportunities as well as challenges in getting this project to scale, and started considering its options. In other words, the processes yielded, or rather the company created knowledge that they could not foresee, which in turn turned out to be problems that they realised that they could not carry themselves. In effect, the challenge of scaling this solution would demand quite substantial financial risk of SystemTeknik as the users would pay for it over 18 months, and the more installations in operation across different markets etc. the more financial risks would have to be endured. Unless of course another solution could be found.

These processes were based on the findings of the first prototype, and involved schematic calculations, forecasts, budgets and plans of how the company could scale operations. In other words, the company had reached a point of knowledge creation where there were less uncertainties (i.e. not knowing the odds of succeeding), and started viewing the opportunities as a matter of risk – vis-à-vis – a matter of *calculating the odds*. They were on their way to alleviate uncertainty.

The solution that emerged was to have the project put into its own legal entity and this company was given the name Remergy (as a combination of the words 'renewable' and 'energy'). The new legal entity was formed as SystemTeknik managed to enrol Trefor (a large and financially strong Danish

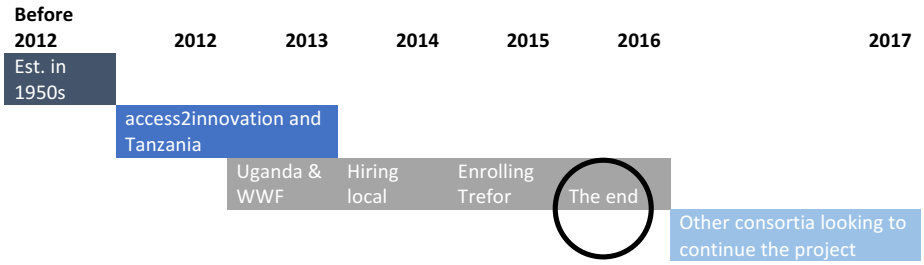
energy operator www.trefor.dk), as they too saw opportunities in emerging markets[32]. Trefor owned 55% of the Joint Venture and SystemTeknik 45%. The exact process of enrolment here has not been divulged. But it is clear that SystemTeknik were able to enrol investors to the idea, and they were able to do so based on a proof-of-concept (artefact), but also because the two parties were familiar with each other, which is quite interesting to look further into (see later discussions of enrolling funding).

The Ugandan project, now coined Remergy, held so much promise that in later 2014 a promise of creating 500 similar solutions across Africa was granted[33]. In terms of creating solutions that could solve complex social problems, profitably, this was quite possibly one of the greatest stories yet – maybe even in the World (at least that was the subjective consensus at access2innovation at the time).

In the course of getting things afloat the Remergy company were getting to the point of having depleted the funding appropriated to the efforts, and according to Trefor, SystemTeknik were not committed to continue, and so Remergy was declared bankrupt[34]. So SystemTeknik had, for unknown reasons, failed in convincing its own shareholders and Board of Directors of appropriating more funding to the Remergy Joint-Venture.

Since then there has been no Africa project with SystemTeknik and access2innovation. Remergy has been closed down, and the individuals have since gone on to other endeavours, and have not been available for further interviews.

[32] http://trefor.dk/Om-TREFOR/Nyheder/Nyheder/2014/TREFOR-vil-lave-baeredygtig-energi-i-Afrika
[33] http://www.electronic-supply.dk/article/view/143913/remergy_far_ordre_pa_500_stromanlaeg_til_uganda#.VkHn1oRiY68
[34] http://www.energy-supply.dk/article/view/202796/trefor_lukker_remergy_ned#.VkHngYRiY68



Timeline 28: SystemTeknik

Note: The collapse of the funding partner's involvement with project, stopped all activities.

During a discussion with Jacob Ravn, the head of access2innovation, in 2016, it emerged that another consortium were considering moving the energy kiosk forward in some way.

6.3.6 Case in summary

The company SystemTeknik (and subsequently Remergy) is a case about a company with enrolled resources and an approved plan of action to seek out a new business area – renewable energy. SystemTeknik had already as a sub-contractor worked with partners in Ghana and had already recognised both the need for renewable energy solutions, and also that getting to terms with doing business in places like Ghana takes quite some time; an estimated five years. The company in many respects was very *aware* of the challenge that lay ahead and the uncertainty of the processes that lay ahead. They explicitly knew that the company depended upon network and contacts for any success to be viable, and this was their primary reason for seeking out access2innovation. Even the funding available through access2innovation was not prioritised (although the company eventually did apply for this funding).

From the outset, and this is important, the company already had set themselves in a position where whatever came next, they would have to deal with. And they did *not* have any expectations or specific measurable goals to guide them – other than to have a grasp of some sort of renewable energy solution within five years. They then also did *not* go into the projects first with the renewable energy generator, then TCDC in Tanzania and with the WWF in Uganda, with a ready-made list of products or ideas that they hoped to sell. They went into the projects trying to solve problems and *learn*, from which they would hope to carve out a commercial enterprise. The evidence to

support this is quite substantial, as the company at every turn enrolled actors (humans and non-human), sought new opportunities (exploration), developed solutions with the customers (blueprinting) in situ and tried to find some way where supplier and customer could meet (validation). And a governing aspect of all these activities seems to be processes of enrolling actors that are not immediately linked to whatever product or solution was being developed (which for this thesis is coined a process of Network Relation Building).

The processes of sense making then are processes of quick iterations of "What is going on here?" and "What do we do about it?", which leads to an idea of a solution, which then is validated externally. What is also very interesting is that the company enrols actors (human and non-human) with no particular affinity to any particular type of actor. The processes of enrolment by this company then are *not* to create strong relations. It is however an enrolment process that differs over time. First there are learning processes and fast solution generation processes followed immediately with validation processes. When an idea takes hold and external parties join in, then the company enrols actors (human and non-human) still with experimentation in mind, but with a much clearer focus on stabilisation of the idea. The company and its solutions were indeed always *becoming*, and the company seemed to be fully aware of the need to organise their activities with this awareness. And only when a solution both in terms of the needed human and non-human actors were forming a clearer pattern, did the company seek out more specific directions for the next steps. In other words, when the involved parties would understand the common point of passage, which required a great portion of uncertainty to be alleviated, the company started to create solutions, which they would eventually try and implement.

In short – the success of this company could be interpreted in part by their *awareness* of what lay ahead – which essentially is completely unknown – but required a *learning* approach. The *awareness of the uncertainty* of what lay ahead seemed to suggest that the company organises its activities, actors and interests accordingly. And a great contribution to the learning of the company can be found in the processes of fast validation. As a note to other researchers it is worth mentioning that the company at no point tried to develop new technologies, but only to combine existing technologies in new ways. The large change in business perspective however, was the need for an e-payment solution, but here too the company did not attempt to develop the solution as it would arguably have been a too large learning curve. They chose instead to seek out and enrol a partner who already had some sort of solution for it. SystemTeknik were in academic terms leaving themselves and the solution they were trying to create consciously *blank* so that others could inscribe attributes to the company and the solution.

So, what may be learned from SystemTeknik is generally that they set out to learn of what troubles the potential customers, they tried to form new solutions together with the customers in various ways, they gave up on ideas if these proved unviable and they continued to explore new opportunities as they went along.

The main actors of the sense making processes of SystemTeknik are then quite similar to Sky-Watch:

- Enrolment of funding
- Exploration and innovation
- Experimenting with actors (validation)
- Enrolment of actors who inscribe attributes (blankness)

But SystemTeknik had the ability to acquire funding at the very earliest stages of development, and only when the joint venture with Trefor was being drawn up did funding again become an issue. The difference, which merits futher investigation, between the company's funding in the early stages of development and that of Trefor, is that the early funding was flexible and could move, where Trefor provided a sort of funding that seemed to be fixed or immovable. And *funding*, as shall be elaborated later, is one of the main actors of all cases.

SystemTeknik are then in other words acting much like research suggests they should:

- Explore, blueprint, prepare and scale
- Enrol others
- Innovate solutions – incl. business models

The new however is that they build networks before they know if they can use them. There does *not* seem to be a linear way of building relations. They do make relations, but they do not do so expecting the relation to last or to be put to work immediately (e.g. the NGO ADRA, whom the company stays in contact with, despite there being no immediate e.g. buyer/seller relationship). And the processes of arriving at viable relations seem to rest on how the processes of enrolment take place and how a *relation* is experimented with and validated (and the product/service then may be validated later). The meshing of actors, activities and interests seem to focus first on securing a major noun-based actor: funding, and then acutely focusing on the relationship building of the company, and then all else follows.

7 Discussion

Abstract: The three cases have been analysed in the chapter above in terms of sense making and enrolment in the context of uncertainty, and the analyses reveal activities that are important in understanding the processes these actors go through. The following is a discussion of the findings and their potential meanings.

The chapter concludes that the adding and subtracting actors are important, but also the nature of relations between actors are. For instance, funding is important but funding must not be rigid or immovable. And the processes of businesses should be organised by including Defining Actors, actors that can constrain the processes and limit the field of potential outcomes of the processes. As processes are limited, then processes of experimentation and validation are able to take place, which in turn allows learning to take place, which then allows the business to pivot, subtract actors, add new actors and form new processes. And the opposite is hypothesised: if a human actor enters into the condition of uncertainty with no boundaries, actors or anything to limit the processes, then learning does not seem to take form.

The linkages between *deduction of information* and the *induction through interaction with others* reveal very significant information of *how* these actors act when creating new solutions in the context of uncertainty. Process theory has been able to sensitise what these actors are doing.

When trying to understand the actions of the three commercial actors in this study in relation to uncertainty, the act of *enrolment* seems to hint towards a better understanding of why some of them are able to continue developing solutions and where some (at least one) of them does not. The *blankness* of SystemTeknik and Sky-Watch – both in terms of the human actors and non-human actors that were enrolled over time, and that of the solutions they were trying to create, allowed them to *attract funding* and other actors, as processes of allowing other actors to inscribe meaning and attributes to the solutions that were being created.

But enrolling actors as matter of blankness may seem very important, it is not enough in terms of uncertainty, as the *processes of experimentation and learning* are also *important in the processes of creating solutions*. Or set into a different phrase – the act of enrolment suits the purpose of learning. Enrolling is learning.

The one actor who seems to organise activities with what could be determined as *not* affording blankness, Anders (and incidentally the solutions he was trying to create), had difficulties in enrolling the actors that fit precisely into his perception of what was needed, and this meant, and continues to do so, that solutions never emerge. Or, again, to set the argument in a different phrase: because there was no open or blank enrolment, Anders did not have opportunities to learn. I.e. Anders was *not* experimenting and interacting with others in a *process of learning*. In a 'knowledge creation' type of analysis, it could be argued that Anders developed what he thought was a sound concept or theory, but he never validated these externally. He never really *allowed other actors to inscribe attributes to the solution he was trying to create (blankness)*. He never really created activities that might have proven his idea wrong, and therefore he did not learn, and the lack of validation prohibits opportunities to pivot the business model.

Such are the main findings explained in a few words. However, delving further into the analyses two different expressions of how to discuss the activities of actors in a process perspective are deemed relevant:

- Processes particularly linked to validation
- And processes linked to activities of enrolment and sense making

Although it must be said that these topics are intertwined, but to afford a more nuanced deliberation of the findings they will be discussed in two sections below. First the processes of particularly validation.

7.1 The processes of developing solutions

When looking through the different activities of the actors studied here, a process seems interesting – the processes of creating relations with others – vis-à-vis networking.

This model (as elaborated when analysing SystemTeknik in section 6.3.4.1) is envisioned as an extension of the model presented by Koh et al (2012), as an attempt at describing the activities of actors looking to create solutions in the context of uncertainty, and ostensibly the actors of this study:

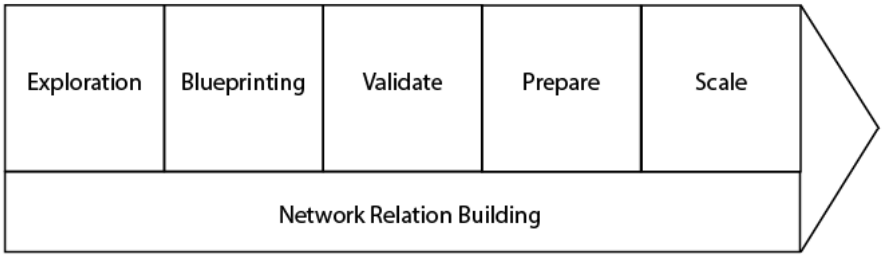


Figure 36: Process of creating solutions
Source: Adaptation from Koh et al (2012), including Exploration and Network

Actors that are able to overcome uncertainty do seem to *explore*, *blueprint*, *validate*, *prepare* and *scale* (the latter two of prepare and scale, are not diligently studied here). *Exploration* is the stage (not included in the model of Koh et al) of the processes all actors in access2innovation go through prior to blueprinting. *Network Relation Building* is a process (also not considered my Koh et al) identified as a continual process that is not always tied to the process of creating a specific solution. The actors observed who perform this particular activity do so both as part of finding a solution, but also as a sort of an exploration of information and contacts. Network Relation Building is here understood as activities of engaging other actors (human and non-human) in part as a process of *constraining* activities but also as part of a process of *widening* potential future possibilities.

In other words, the activities of engaging other actors can, but does not have to, relate to a specific cause or product or solution that is determined.

Activities of networking can also be activities of engaging actors to learn without any preconceived conviction that engaging the actor will produce anything useful. Enrolment then does not always have common points of passages.

Each of the cases here have different processes that can be described with the same model.

Remote Sanitation is a process much like this:

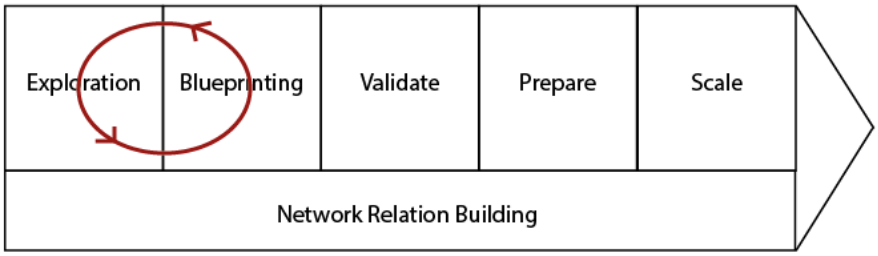


Figure 37: Remote Sanitation process of creating solutions
Source: Own creation

The observed activities of the main actor of Remote Sanitation, Anders suggest a process which is a closed circuit of Exploration and Blueprinting, but without a Network Relation Building process, which in turn hinders a process of Validation. The exploration processes were for instance the encounters with access2innovation and the trips made to East Africa. And the processes of blueprinting happened almost exclusively in the home office with very little input from any other actor.

A way to understand this is to view the actor's activities in businesses where he *did* have a network relation and constraints, such as Anders' catering and sewage technician work. In those business areas, he was constrained and had relations he could enrol from which to gauge his progress and ideas (Validation), which in turn allowed him to innovate and succeed. But when faced with uncertainty and the lack of context, Anders seems to have been halted by continuing to work with a method of business that does not work in a different context. There is no documented way of concluding anything rigorously in matters of the other business areas of this entrepreneur, but it does seem likely that the established industry standards, existing markets and business paradigms have allowed the entrepreneur to act with constraints; i.e. within a context. And in the context of uncertainty, as is the

purpose of this thesis, Anders was never part of a context from which to create solutions.

And Sky-Watch:

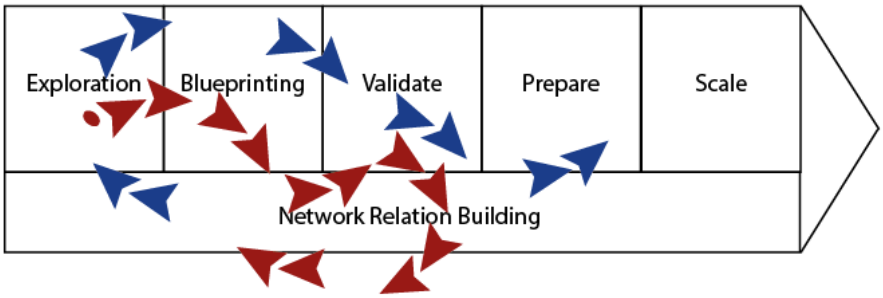


Figure 38: Sky-Watch process of creating solutions
Source: Own creation

Sky-Watch is a case of an actor who is Explorative and has Network Relation Building activities. Explorations include the access2innovation facilitated network meetings and trips to Angola etc., which included networking activities as well. The clearest point in the data of this thesis regarding networking was where Jonas explains his activities when visiting Colt Inc. where he spent several weeks roaming the corridors of that company to learn what they were doing, and from these activities new ideas emerged. Blueprints were created and tested, which failed (red arrows), which then would lead to reaffirming network relations and letting others go, a new process of Exploration, Blueprinting and at some point, the right mix of actors, activities and interests (blue arrows) allow the company to prepare a product and are now in some sort of process of being able to Scale. The process of Sky-Watch however does not seem to be effective or aware as such, as is easier to perceive by looking at the processes of SystemTeknik in the following.

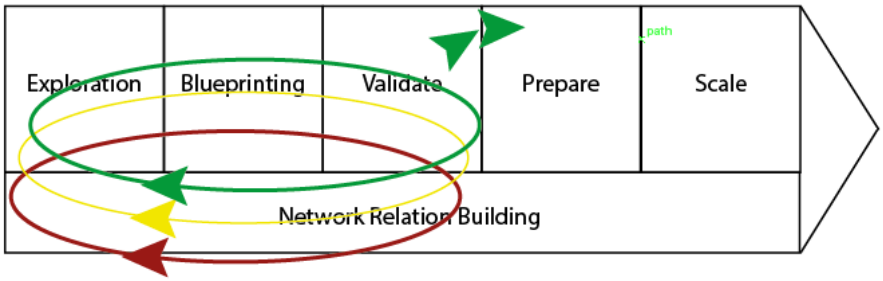


Figure 39: SystemTeknik process of creating solutions
Source: Own creation

SystemTeknik at the outset were on *a deliberate and conscious learning mission*. It is important to explicate this – the company *knew* that the processes they were heading into would be about exploring and learning. They had no hopes of selling what they had lying around on the shelves.

The first cycle of Exploration, Blueprinting and Validation (in this thesis it was the renewable energy generator – imagined in the figure above as the red circle), coupled with Network Relation Building (e.g. enrolling students to help the processes) ended with a conclusion that it was not the right time to investigate this opportunity any further, and it was halted.

Next came the Tanzania Exploration, Blueprinting and Validation processes and indeed Network Relation Building (as imagined here as the yellow cycle in the figure above) of which there were several recurring cycles. This too eventually led to a conclusion that a solution with the TCDC was not a viable perspective for the company so that too was halted, or rather changed as the company did talk with another neighbouring NGO (called ADRA – not studied here) and continues to develop this relation.

Then came the Uganda Exploration, Blueprinting and Validation and Network Relation Building with the WWF (green cycle with the added step of 'prepare'). Again, the cycles were recurring and network relations (actors) were being added and subtracted over time. During the course of investigating what could be possible, drawing blueprints of potential solutions and validating them, and also enrolling funding etc. SystemTeknik end up with a concept worth taking to the next step: *preparing* its implementation. The financial partner Trefor enter into the picture as the new joint venture Remergy is ready to *scale* the solution, but then funding

wavers and the concept is halted. It would seem that the design of the process from the company's perspective of learning and exploration, made it clearer and more systematic in the way opportunities were investigated and experimented with – and also crucially let go if not found viable.

In the case of SystemTeknik there were clearer points of start and stop when investigating opportunities, where the other two cases were either less successful or more ad hoc. Particularly Remote Sanitation seemed never to reach a point where an idea or concept could be let go, primarily because of the lack of validation, which in turn meant *that all solutions were possible.* Or in other words, Anders was adding actors over time, but seems not to reach points of being able to subtract actors over time. There was never clear evidence to suggest the entrepreneur that an idea *would not work*, which in turn might explain why all ideas would linger and never reach a state of becoming possible.

The interesting part though of all the cases is that each of them has different contexts and different ways of making sense of events, and ostensibly they organise solutions differently. SystemTeknik is in many respects the most interesting, as it is the case of a company that has come closest to actually creating a solution in the context of uncertainty, with potentially vast impact on complex social problems associated with the lack of access to electricity in rural communities.

Sky-Watch are now able to deliver solutions for e.g. mine clearing as they had set out to those years ago, but getting to that point was to avoid uncertainty all together. Sky-Watch, it could be argued, was *becoming* an established company of the likes of SystemTeknik, which in turn allowed them to create a solution.

And then there is Remote Sanitation, and the actor Anders who attempts to create a solution, but does so as a process of calculating risk, and not alleviating uncertainty.

The process of creating solutions in the context of uncertainty is indeed:

- a meshing of actors, activities and interests,
- where actors make sense of events, enrol other actors and validate with others, which leads to actors being subtracted from the processes
- in processes of deduction of information and inductions from interactions with actors (as with validation),
- with both noun based (as the initiating actors) and verb based actors (the actors that are part of the innovation processes),

The act of validation is significant and important, and it requires the engagement of external actors, who come and go over time. Validation is a relationship issue, and relationship issues are here particularly addressed in terms of Enrolment.

7.2 Sense making and Enrolment - a networked perspective

In an attempt to sensitise the events of the three embedded cases one contributing perspective may help, and as the embedded cases have thus far revealed that there is a correlation to something with 'context'. In other words; the actors and their context seems to be critical to the processes of creating solutions in the context of uncertainty.

For example, the access2innovation program is based on partnerships and the access2innovation initiative essentially becomes a network of relations, and it is this network that ultimately becomes the defining characteristic of it. The terms *network*, *relations* and *context* seem to have common understandings, and applying the considerations of networks and what they look like (which is not the specific interest of the thesis, but is understood implicitly), coupled to the theories and subsequent cases and analyses of this thesis, what can be learned by expanding e.g. the idea of blankness to include a more in-depth understanding of the *relations* – vis-à-vis context – with others?

Literature suggests that *blankness is a requisite of networks*, as actors would inscribe meaning into the relations as part of maintaining relations. But in terms of creating solutions in the context of uncertainty, and ostensibly in the context of innovation, there might be contributing perspectives worth discussing.

It seems that a process of innovation for instance would favour the actor who is not bound by anything (no strong relations or context do hinder movement). This actor would then be allowed to go wherever there may be an opportunity.

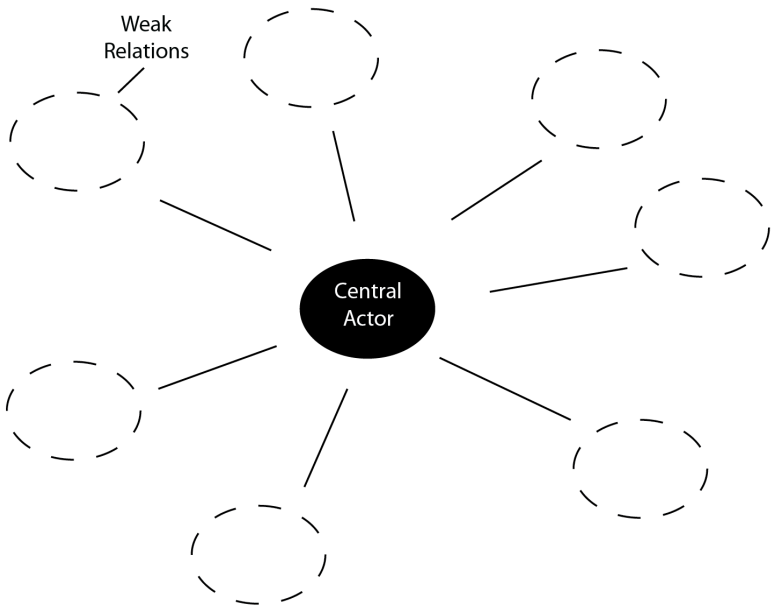


Figure 40: A central actor with only weak relations
Source: own concept in progress

The figure represents a central actor around which there are unclear or weak relations (this is for instance the case of Remote Sanitation and Anders as the central actor). The relations can be other human actors and organisations as well as non-human actors of technologies, processes, devices etc. The illustration suggests that the central actor can do anything, when all relations are weak or intermittent, so to speak. There are no ties, hindrances or constraints. In effect, the processes of innovation would benefit from *not* having constraints.

But the cases here reveal variations on this.

Sky-Watch is a case, which started with one main actor (access2innovation) who enrolled other actors and forged relations between different stakeholders with a degree of blankness. This constellation of actors did not persist, and then another actor (Jonas) took the reins and started building new relations with others. There was always someone taking the lead, and there was always someone or something setting or constraining the agenda. The helicopter was a constrained perspective of what the company was innovating, and the partners involved would somehow maintain this narrow

perspective of what is supposed to become the solution. A helicopter hobbyist in the network/context/relationship could be argued to follow his bounded rationality whereby it becomes natural for him to suggest that the solution Sky Watch should create, should be a helicopter.

After Jonas took over from access2innovation the constellation of partners looked much like this:

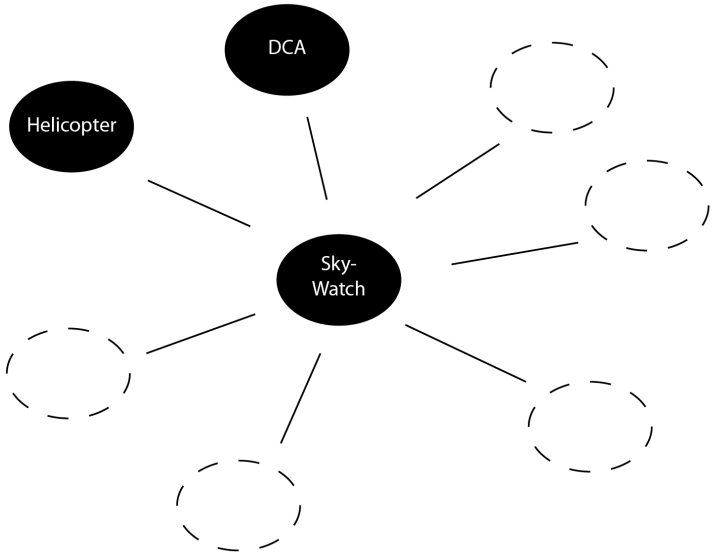


Figure 41: Sky-Watch relations to others over time
Source: Model created on basis of data analyses

The company had at least these two strong relations (the black circles indicate strong relations):

- they were going to create a helicopter assembled by use of existing technologies.
- they were creating it for Danish Church Aid (DCA)

Sky Watch could not, theoretically, go in any direction it wanted. The related actors constrained the company's direction. The board of directors can constrain the processes of innovation. Someone of all the stakeholders and actors (human and non-human) can constrain the agenda, so to speak.

The next event of testing the first prototype of the helicopter changed the perspective of what the relations were going to be:

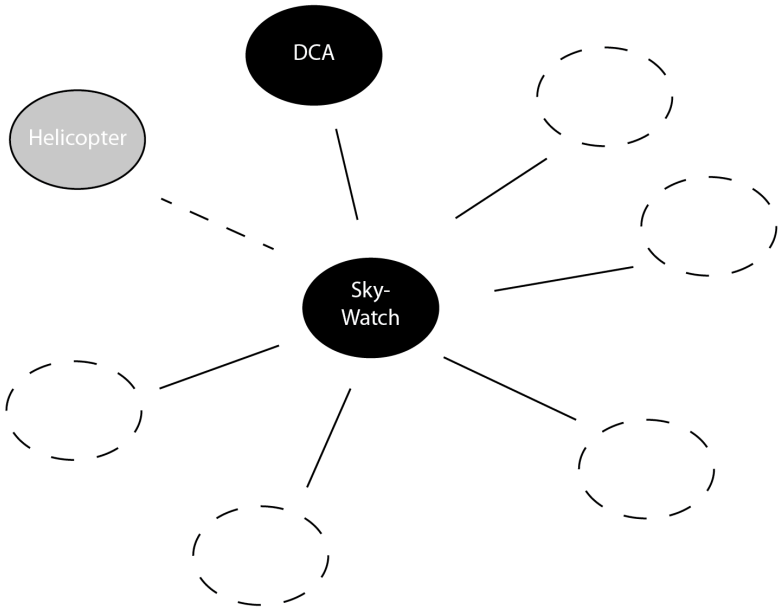


Figure 42: Sky-Watch relations to others over time
Source: Model created on basis of data analyses

The helicopter was put into question (highlighted here as a grey colour to signal an actor that has become a weaker relation), and an amendment to the business concept was needed. Two things were prominent:

- the idea of creating a helicopter from existing technology was shown, through experimentation, to be invalid.
- thus, a new line of business development was needed and for that the funders of the company needed to be convinced.

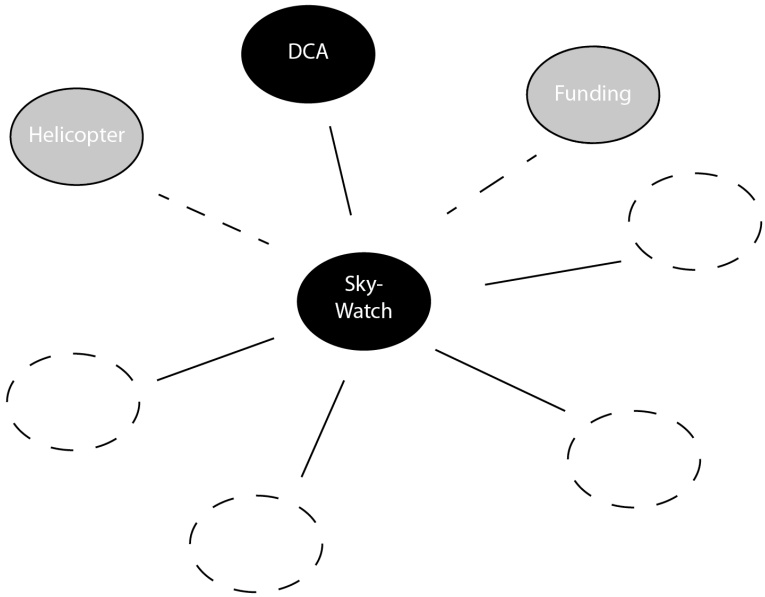


Figure 43: Sky-Watch relations to others over time
Source: Model created on basis of data analyses

The DCA were still the strongest link, but the solution was becoming more questionable, and the funding would need to stay on board. So, the company moved into creating proprietary technology, which required more funding and a different business model. And reaching a solution would then require a different perspective of development and testing. The funding (picture above in grey to signal that funding was not entirely a strong or fixed relation, but was able to change or move) was able to move with this new direction but the DCA were not.

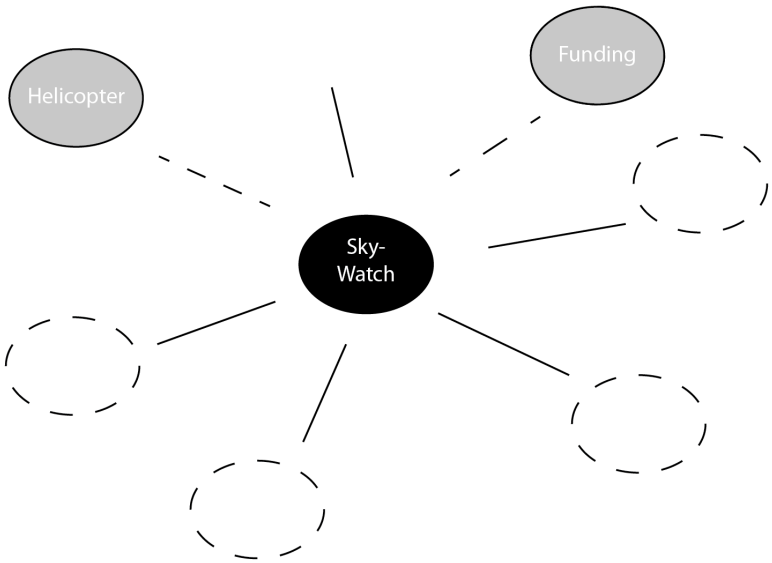


Figure 44: Sky-Watch relations to others over time
Source: Model created on basis of data analyses

Suddenly the main customer and a leading component of the direction of the company – Danish Church Aid – was gone. The company would then have to replace this customer with others.

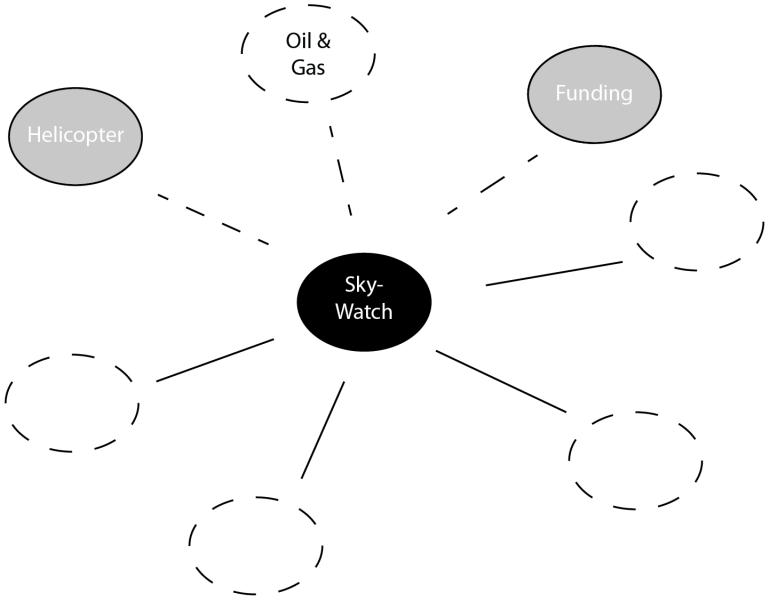


Figure 45: Sky-Watch relations to others over time
Source: Model created on basis of data analyses

The company had envisioned that maybe Oil & Gas was a potential segment, as well as others. And the processes of the company continued with processes that were defined by stronger relations, but moveable relations. The idea of a helicopter remained for a long time, but it did not survive entirely – it changed, and quite significantly (ended up being about the ECU, but that does not make it the 'only' possible solution of the company as that can even change over time). So too would the funding have to be able to change in accordance with the developments of the company.

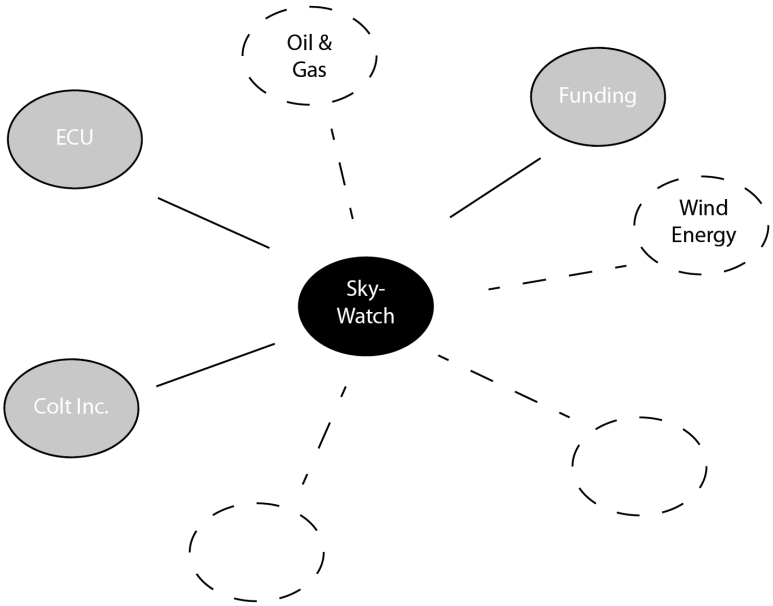


Figure 46: Sky-Watch relations to others over time
Source: Model created on basis of data analyses

The illustration suggests that a few actors (grey) were fixed or well-defined and strongly linked to the business, such as the investors, Colt Inc. and the ECU (the controlling device of the drone, not the drone itself), but other relations were weak and could come and go. But by having *stronger* relations or constraints, these offer quite specific points of validation. It is as if to say, that the company, by having a point of passage, a certain aspect of the business that is clear, the process of validating solutions *becomes possible*.

SystemTeknik too is a constrained operation, and maybe even more so than Sky-Watch, as this is a company with many years of existence and a significant company infrastructure. It is a company with history and dominant logics. They think in electricity one might say. They perceived the problems that they are able to solve in terms of electricity. And yet they ended up with a solution, which is arguably different from what they were familiar with from the beginning. The company SystemTeknik is also guided by a Board of Directors who set limits of what can and can't be done to some extent. They too constrained the agenda. They too constrain the processes of innovation. But somehow the company could see itself through a process that created a solution not immediately comparable to what had been created before, through different iterations of business models and validation

processes; through alternate processes of exploration, blueprinting and validation. But some part of the solution together with the WWF, access2innovation and local municipality in Uganda did include some part of what already existed in SystemTeknik. There was in other words some sort of connection to constrained relations.

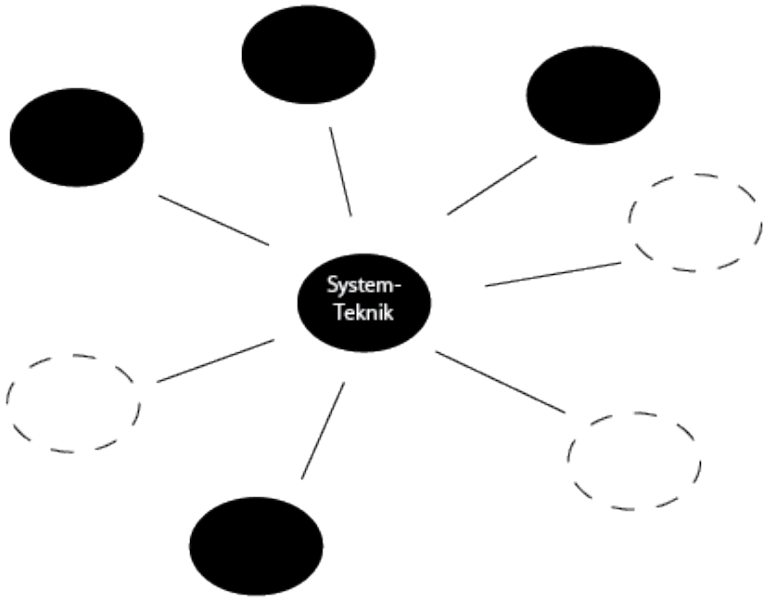


Figure 47: SystemTeknik relations over time
Source: Model created on basis of data analyses

So, compared to Sky-Watch one could argue that SystemTeknik have even more limiting perspectives of what could be possible to work with (visualised in the figure above as having more black or well-defined actors in the relations to constrain activities), but that does not seem to have had a negative impact on the processes of innovation and creating solutions. The stronger relations here may have had some influence on the processes of validation. The company had something to benchmark, something to evaluate and validate if it was good enough or not.

SystemTeknik when visiting the MS ActionAid training centre (TCDC) in Arusha, Tanzania were going into this exploration with a few very strong relations, but also weaker relations.

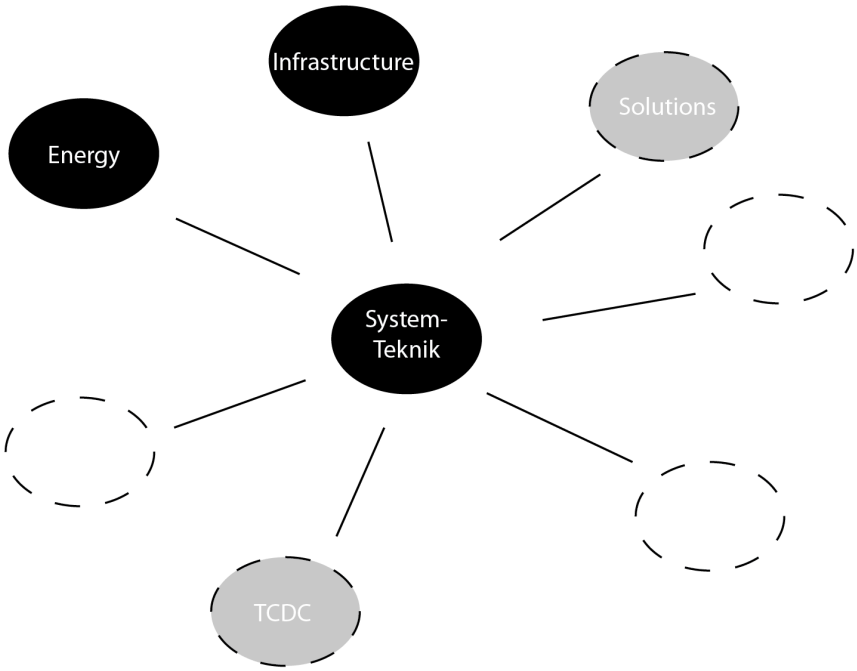


Figure 48: SystemTeknik relations over time
Source: Model created on basis of data analyses

The company dealt with *energy* in different forms, and there was an *infrastructure* (shown as black and solid components of the company's business model) not easily changed, which in turn constrain the processes. But the *solutions* that the company was looking to create were not fixed, and as it turned out, so too was the potential *customer TCDC*. SystemTeknik were trying to experiment with different solutions, as constrained by what is possible with the given immovable actors in its network, and they did this *with* the potential customer. When no solutions were possible, then the TCDC changed roles in relation to the company.

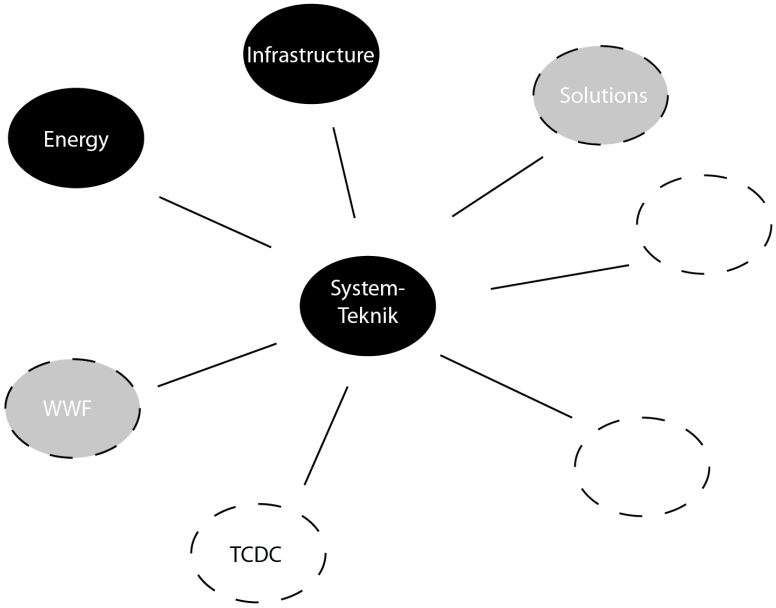


Figure 49: SystemTeknik relations over time
Source: Model created on basis of data analyses

TCDC became a weak relation, and the WWF entered into the picture as a *stronger* relation. And then new ideas and solutions were experimented with. Interestingly though is that the solutions envisioned with the WWF were not in any way similar to those envisioned with the TCDC. There was, it seems, an *ability to let go of previous concepts*. The "solutions" were indeed related to renewable energy solutions and could therefore be considered a *stronger* actor in the processes of the company, but the solution or technology were still open to interpretation (movable). The company had in other words not stuck to an idea – they were able to innovate, and crucially let go (subtract actors) when experiments showed that they had to let go.

What is also interesting is the way funding plays a part for SystemTeknik. *Before* starting the exploration *process the funding of the projects was already allowing for activities of exploration and discovery*. The funding was in other words *already flexible*. So, when the actors of SystemTeknik were trying to explore solutions they did so with the blessing of the Board of Directors.

Essentially, the company was Defined by one actor – Electricity, as this is the main field of interest of the company, and another actor – Funding, was

flexible enough to allow experiments, processes of validation and enrolment to take places.

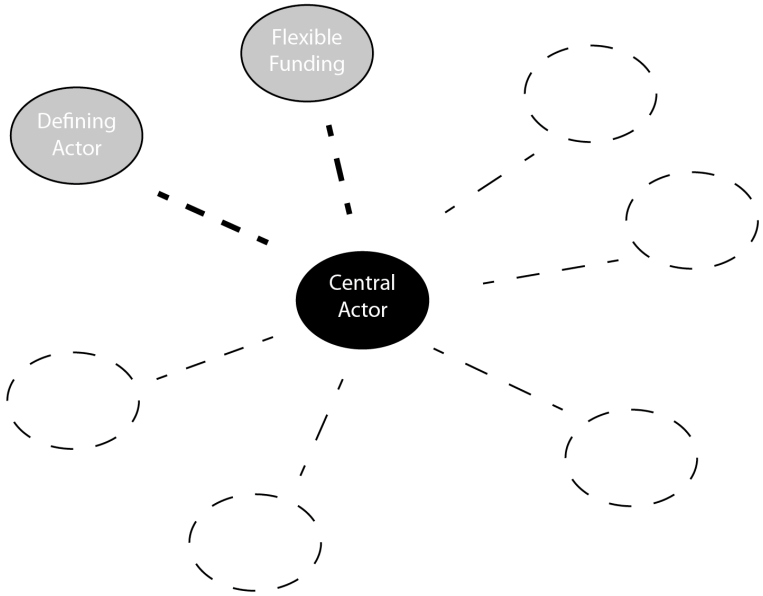


Figure 50: SystemTeknik in a networked perspective
Source: Model created on basis of data analyses

The same model could be applied in case of Sky-Watch, with Defining Actors that did change over time, as did the Funding.

And then there is **Remote Sanitation**.; effectively a company with no immediate constraints or contexts to limit the field of potential outcomes. There are no real partners or networks that force the agenda, there are no anchors, and no holding points and Remote Sanitation *should* be able to go after whatever makes sense to the company. The processes of innovation would theoretically speaking not be hindered in any way, and yet the efforts of Remote Sanitation yield close to nothing.

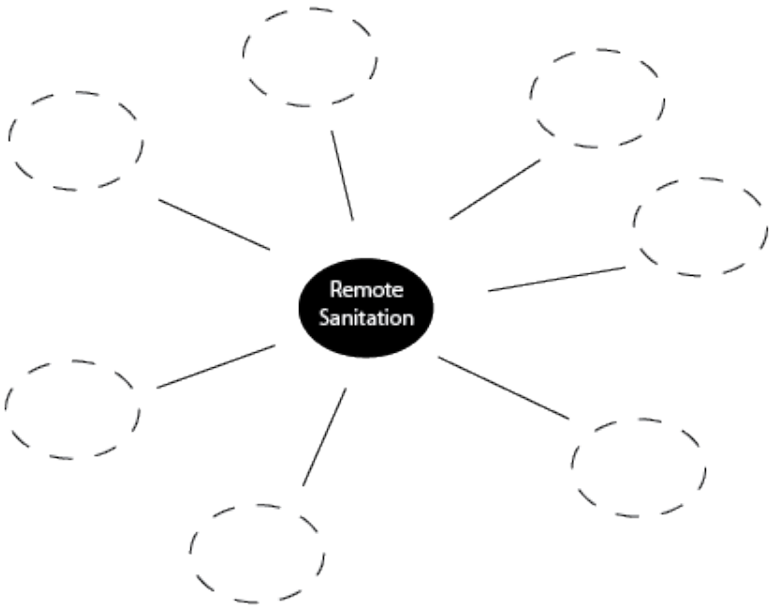


Figure 51: Remote Sanitation in a networked perspective
Source: Own production

Anders did explore and blueprint but not *with* other actors. No other actors were never able to inscribe attributes to the solutions that Anders was trying to create, and therefore no processes of validation took place. In laymen's terms, it could be said that Anders did not find a need to seek alternate perspectives on his ideas. Or in terms of access2innovation, which is more pertinent, it could be argued that Anders was not *put into* a context.

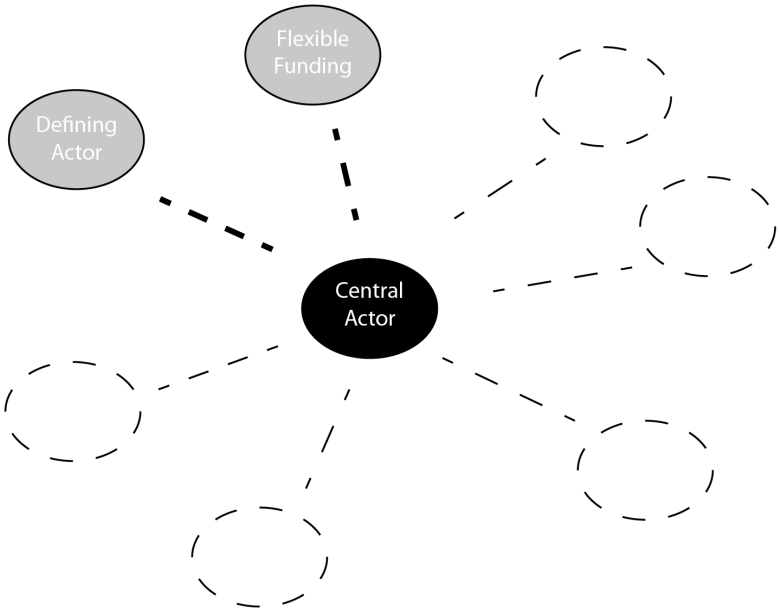


Figure 52: An ideal commercial actor can innovate solutions by virtue of context
Source: Model created on basis of data analyses

It is here suggested that the *prerequisites* of creating solutions in the context of uncertainty could be related to factors of *not* having complete flexibility of options! It could be suggested that some of the components of the company should *not* be unclear or questionable. There needs to be something to hold on to and constrain the focus of the company and therefore *limit the field of potential outcomes*!

Maybe actors that have strong ties to other actors (human or non-human) but with a potential of exploring relations to unknown actors (weaker relations) represent constellations of companies with better chances of creating solutions in the context of uncertainty, and by fulfilling such prerequisites stand a chance of dealing with uncertainty?

To paraphrase Granovetter again ('The strength of weak ties' - 1973) companies that wish to create solutions in the context of uncertainty may indeed find new solutions by adding and subtracting a long range of weak relations over time, but the companies that do have traction and are able to create solutions are those that have *stronger* ties with some other actor(s) – to begin with! The existing defining actors of companies help with processes

of enrolling actors who inscribe meaning and attributes to the solutions, which in turn helps with processes of validation. And all of these processes are linked to how the actors make sense of events and what it is they think they should do.

The sense making process of Anders mimics an actor who sees no reason to challenge his concepts, which is argued here to be a sort of process defined by previous businesses practices. Where the other two companies have sense making processes, although different, they have similarities in that both of them explicitly point out that they *do not know* what the solution is going to be, and that they are on a learning path.

And in the case of Sky-Watch and also SystemTeknik to some extent, the ability of *funding* to move with the changes seems to be central. Not having funding is very clearly a hindrance to the process of innovating solutions as shown by Remote Sanitation. But *having funding is not enough* as shown by the case of WaterBySun – because funding can constrain *too much*. In the case of SystemTeknik funding that was appropriated was done so with a conscious understanding that the company was in a learning process and therefore activities were experimental to begin with. Sky-Watch did not start out with a specific sense of having to experiment and funding was not in that sense flexible, but when experiments failed and the company had to pivot, the funding moved along with the company.

The actors studied here make sense of events in part due to that which constrain them, and constraints can be beneficial as they allow for a process of validation and enrolment. This is one interesting finding.

Another is that the process of creating solutions is linked to the ability to pivot or change direction if needed, and indeed the ability to completely let go of an idea if validation proves it has no validity. Within the ability to change direction is the requirement of funding to also *change with the company*.

The processes of validation, of enrolling others and sense making, when creating solutions in the context of uncertainty, then should *not be organised as processes without constraints*! But constraints must not be fixed to a degree that they cannot let go or change.

Thus:

- exploration, experimentation and network are important processes when creating solutions in the context of uncertainty (which could be argued to fit well with the argument of adopting a business model

approach as suggested by Kubzansky 2012 and others).

- But the *nature* of particularly networking seems to be more than utilitarian. Network relations form the agenda of the processes, and relations (actors) come and go over time. An important networking activity is *Exploration of Relations*, which is *not* a process of seeking out actors that are preconceived to be useful, but simply to explore other actors and learn what can be learned.

7.3 Sub conclusion

There are processes that are better understood by understanding *the nature of relationships* that the actors have *before* attempting to create solutions, and particularly the *nature of funding and how funding is either permitting changes in business, or is able to move with the business as the business changes*.

The analyses here give evidence of an actor (Remote Sanitation and Anders) with no obvious source of constraint who is *not* on a learning mission, but on a mission of affirmation, who is still struggling to create solutions. And affirmation is not possible because there is no context from which to enrol actors that fit *precisely* with the preconceived idea or concept and therefore the affirmation does not lead to new knowledge.

Another actor has no initial source of constraint (Sky-Watch and Jonas) as well, but becomes part of a network of relations who constrain the processes and eventually ends up with finding a viable solution.

And then there is the established business (SystemTeknik) with many constraints who seems to be able to start and stop, restart and stop and so on, at a sort of effective way learning, despite being constrained maybe more so that the other cases here. The perspective of innovation or indeed the perspective of learning seems an excellent way of describing the processes actors go through when attempting to create solutions in the context of uncertainty. The literature on processes of sense making and enrolment does suggest that actors that organise solutions do so by verbified actors, and in the cases here, they are particularly:

- Exploration (sensing)
- experimentation (validation) and
- relationship building (enrolment)

These are sensitive expressions of the actors and their actions. And the contribution of this thesis is that of *networking* and *funding*.

The role of funding is an actor which role seems to be significant. Funding has to be there for solutions to take form, but because of the exploratory and experimentative nature of the processes when trying to alleviate uncertainty, funding should allow such processes or at least be able to pivot or change as results reveal a change is needed. In practical terms the actors may start out with plans, budgets and other noun based actors, but the process of learning, the verb based actors, are crucial: exploring, experimenting and networking.

And networking is essential as the relations to others give context from which to validate ideas and learn. When trying to create solutions actors co-develop solutions in line with developing relations, but as soon as the solution seems unviable, the solution is dropped or shelved, and so too is the commitment to the relations that were linked to the solution. This is an interesting point, in that relations are only as good as their ability to become part of the solution, which might be useful knowledge for facilitated cross sector partnerships like access2innovation.

Then the processes of creating solutions in the context of uncertainty can be defined as processes of blueprinting, validation etc. as suggested by Koh et al (2012), but the order of which relations both constrain activities and help activities in terms of enrolment, suggests that activities have two main lines of activities. Activities that,

- relate to the creation of a solution that is defined
- and activities that relate to the relations of actors (network) without a defined purpose

And building relations is far from utilitarian only. Sky-Watch and SystemTeknik act with other actors without knowing beforehand if any of the relations to other actors will yield anything. Or probably more correctly, relations to others always yield something, but not always in the way imagined. SystemTeknik might have had ideas of working with the TCDC and tried to do so, but it did not work out. Even with the WWF there were ideas of the relationship, but the relationship was not reciprocal. The relations change. Relations are always becoming. Relations are added (enrolled) *and* subtracted over time with the process of learning through validation. But relations are also Explored, which is *not* specifically a matter of Enrolment. 'Enrolment' suggests activities related to a cause or a defined purpose, but *Exploring Relations* is something different. By reaching out to actors not necessarily known a priori to be potential valuable partners, then new opportunities and solutions could be found.

Phrased in a sentence: networks are created as part of a defined purpose (interessement) when creating a specific solution, but network relations are also explored *before* they are activated or used.

The relations that become crucial for a solution to become viable, are not created by a partnership of actors who are predetermined to be good partnerships. One cannot know beforehand if another actor will fit or not. By trying out and even *experimenting with relations* and not just experimenting with solutions, then solutions become viable over time.

Phrased by use of a social science theory use of words; networks *are not*. They are *becoming*. Then to benefit from relations one must attempt at *building* them (verb based actor), which means add and subtract over time. One cannot hope to benefit from networks by *having a network* (noun based actor).

And observing the actors in this study, the interactions of actors, particularly the interactions over time by the Defining Actors and Flexible Funding are what define the processes of actors that are able to create solutions in the context of uncertainty.

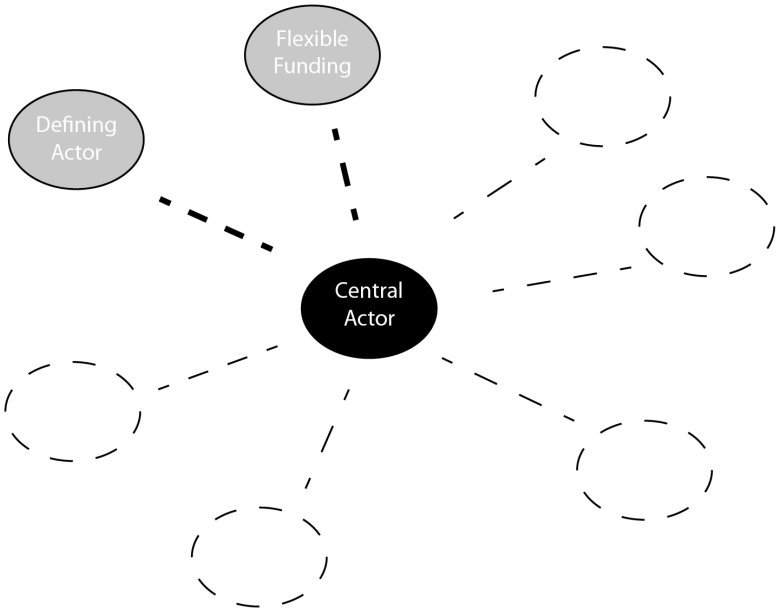


Figure 53: An ideal commercial actor can innovate solutions by virtue of context
Source: Own production

8 Conclusion

This thesis is part of an action research based initiative, access2innovation, which purpose it is to come to a *better understanding of how market-oriented approaches may lead to new solutions of complex social problems* in areas such as Sub Saharan Africa. The concept is born out of the vision that foreign commercial businesses such as Danish businesses could both gain access to new markets and profit, and at the same time help solve social problems.

During the first version of access2innovation (from 2007-2011) there were benefits of facilitating collaborations between civil society, research and industry, and as these actors tend to have very different agendas, projects require an external facilitator such as access2innovation (Ravn 2012). However, in the course of the projects it became clear that the facilitators of access2innovation *do not truly understand what it is the businesses are doing*, as they *are fundamentally not doing what was expected of them*.

This thesis has as its main purpose to investigate this. And the purpose has *not* been to discover *what* solutions business utilise today, but discover *how businesses create these solutions*, and therefore the *processes* of arriving at these solutions. In other words, the interest has *not* been to describe what e.g. a good business model or solution looks like, but in finding out what the processes are behind the creation of e.g. a business model or solution.

The value of increasing an understanding of commercial actors as they act, is to help form better processes of facilitation in order to solve complex social problems. Hitherto businesses, and indeed other sector partners from civil society, have been categorised rather holistically, but as this research has shown, there are more nuances of what processes different actors go through, which is informative in organising future facilitated network based partnerships towards Sub-Saharan Africa and solving complex social problems.

To highlight the conditions under which these actors are thought to create solutions and ostensibly their businesses, this thesis introduces an interpretation of *uncertainty*. Uncertainty is here understood as a condition where institutional voids (or unawareness of existing institutions) of both physical and mental institutions as compared to familiar markets of e.g. Europe, require commercial actors to reach far out of their core businesses to discover if there are other crucial elements to the success of the company that needs attention. The processes that were *expected* to emerge were that of a discovery driven approaches, but very few of the observed actors in the first years of access2innovation did so. This lead to this research focus:

To understand the processes of commercial actors attempting to develop solutions in the context of uncertainty

To allow for a more structured approach, the following questions have guided the analyses.

a. **How do actors make sense of the opportunities?**
b. **How do actors enrol other actors as part of developing solutions?**

The research was conducted as embedded case studies of three companies, Remote Sanitation, SystemTeknik and Sky-Watch.

The purpose is to discover the processes of these actors to inform the overall case, access2innovation, of how to improve the facilitation of partnerships, and possibly also to inform new discussions of government funding and the concepts of solving complex social problems through market-oriented approaches. The activities of access2innovation are not in focus of the analyses here, but the activities of the embedded actors are. The knowledge created from this study can then be discussed further in organisations such as access2innovation. The implications of the findings in this study for the activities and organisation of access2innovation will be reflected upon in the last chapter following this conclusion.

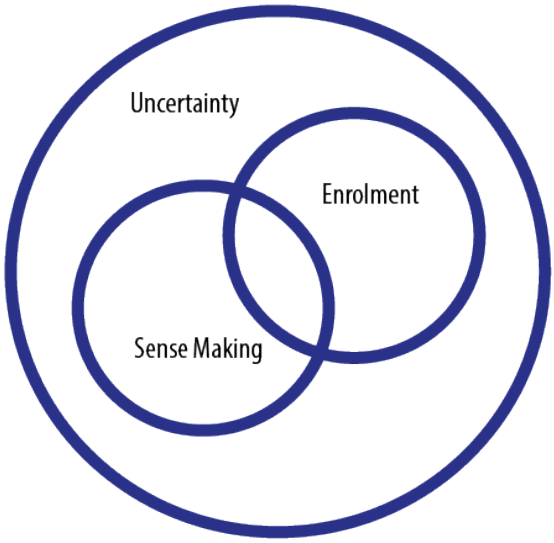
Data was collected in part through action research as access2innovation consists of consultants attempting to create practical solutions, and in part ex-post interviews with actors from which the processes of the actors may come to light.

The cases elected for this analysis were chosen for their ability to show different aspects of doing business in varying ways, so as to afford a more nuanced picture of the processes of business:

- One case is based on one single entrepreneur, with previous success in creating business in the home-market, who now looked to East Africa for new opportunities, but has yet to create any solutions (Remote Sanitation).
- Another is also based on an entrepreneur, but this one is a young person with no experiences in building business – but despite this he is able to go far (Sky-Watch).
- The third and final case is that of an established company (SystemTeknik) with vast experiences in business in general, but also of doing business in another country of Sub-Saharan Africa; Ghana. A

case of how an established company is still capable of reaching outside its core competencies and create new solutions.

The data is sensitised by use of a vocabulary drawn out from process theory, Actor-Network-Theory, sense making and contributing social science



theories. The theoretical framework was condensed into this framework.

Figure 54: Thesis framework
Source: Own production

The working research questions of dealing with Uncertainty were embedded in the perspectives of Sense making and Enrolment. Sense making and Enrolment are visualised as being researched separately, but they are intertwined and not easily discussed in isolation.

8.1 Sense making and enrolment

The actors make sense and enrol actors with very different approaches, which seem to be dependent upon the actors' *relations to others*. The processes of sense making are in other words defined as much by *how* they act as well has how *they are related* to others.

The *expected* behaviour of commercial actors looking for opportunities in Sub Saharan Africa was that of innovation; e.g. observing, experimenting, validating etc. The actors that prevailed did in fact have this sort of process in order to alleviate uncertainty, and the single actor found in this thesis that did not prevail, very clearly did try to innovate, but is best described as a process of assessing risk (not uncertainty).

The singular actor Remote Sanitation who struggles to develop a viable solution has no context or constraining relationship to actors (human or non-human). In other words, there are no actors that can limit the field of potential outcomes of the processes. Where the two other cases in the study are constrained by board of directors, stakeholders, customers etc., which in turn allow for processes of validation. The relations then are important in *defining the processes*.

The meshing of actors, activities and interests suggest that making sense of events (in the context of uncertainty), must be based on an idea of *learning*. Actors embark on a process of learning essentially where the potential that the end solution might be something quite different than what was originally envisioned. The context of uncertainty might be preconceived as a context where actors fair better if there are no constraints or limiting aspects to the process of creating solutions, but indeed the opposite is more likely. The actors investigated here that are able to form activities that lead to solutions are those that have a narrowed perspective of what they think they have to do (make sense), which is a sense making process *defined in part by the actors that are already known* and familiar and *in part by the actors that are enrolled over time – but also the actors that are subtracted over time* (through processes of validation). There are essentially few actors that survive the process of creating solutions in the context of uncertainty. And the challenge, it seems, includes a continual search for the appropriate actors to enrol, vis-à-vis activities of networking.

Significant for two of the cases studied here is the process of engaging actors without any preconceived knowledge about the likelihood that the new actor(s) are going to become fruitful relations in any future solution. It has been argued in the study here that external actors have a significant say in what the solution ends up becoming, and then the processes of enrolment become important. Where companies leave room for other actors to inscribe attributes to the solution under development (blankness) then processes of adding and subtracting relations to other actors (human and non-human) is allowed. From these processes over time the actors that are suitably to each other enables a solution to be developed. The process of finding and experimentation with suitable actors is a significant step in alleviating uncertainty.

External actors are also important in processes of validation as they can detect problems or challenges with the intended solution and help alleviate uncertainty. The process of validation then is very much linked to the processes of enrolment. And these processes are part of the sense making of the actors. If an entrepreneur understands the process he is about to go through as a process where he knows, *that he does not know* what the solution is going to be at the end, then a process of learning makes sense. Such an entrepreneur would stand a chance of alleviating uncertainty.

But how an event or context makes sense to the actor (in the context of uncertainty) is important but does not guarantee results. The external actors and partners are very important as well. Partners have traditionally been interpreted as either weak or strong partners or relations. Strong partners suggest someone who are committed or close to one another and help shape each other's activities, where weak partners are not necessarily committed, endure little risk in the relationship, but do offer inspirations for new ideas (strength of weak ties). When alleviating uncertainty, partnerships in a networked perspective suggest that the partnerships or relations may have to consist of both strong and weak ties. But the strong ties need to be *moveable*, particularly in the case of funding.

The aspect of funding can both be an enabler and to some extent a constraint. No funding is widely a constraint, which is to say that the actors cannot enact their solution creation process without funding to do so, but the *manner* of the funding itself is relevant to research further as these indications suggest:

- Funding where investors and the business actors are mutually in agreement about a strict *plan* and offer little in terms of deviation and innovation, seems to have difficulties in the business processes in the context of uncertainty. This can be coined as a *lack of the ability to pivot*, as an expression of a business model where the decision-makers in both the investor side and entrepreneur side fix their idea into place and leave no room for movement; i.e. the crucial aspect of funding is to move with the findings of the company as the company experiments with actors and solutions over time.
- Processes where noun-based actors are prevalent; e.g. budgets, plans etc., which is argued to be the favoured approach of funders, are found with the actors that have difficulties in creating solutions, and the opposite can be said of those that succeed as they are predominately guided by verb-based actors of experimenting, innovating, validating etc.
- Funding given to a business venture with an initial plan, budget etc. but with *room for movement* stand a better chance of succeeding

(start with noun-based actors but allow for verb-based actors). But the data here reveals two slightly different processes:

- One case, SystemTeknik, revealed an *explicit awareness* of the expected long learning curve (ca. 5 years) for a business to emerge in the context of this study, where the funding and approval of the business venture was structured already from the initial phases as a process of learning and experimentation.
- Another case started out with an idea (Sky-Watch) about what the company was set out to do, but by quickly creating a prototype that failed, the business had to pivot. This is a process where the actors did not show a clear *awareness* of the learning path they were taking, but they did show an ability to break with the original idea and move forward towards a new idea when validation processes showed that a pivot was needed. And the funders moved with the business, and if the funders would not, the company would not exist today.
- In both cases the companies were able to add actors, and subtract actors as part of a learning cycle.

Sense making then for those that seem to be able to move forward are those that mesh interests, actors and activities by adopting an enactment of ideas by experimenting, including processes of enrolment, validation, pivoting and new idea generation.

And interestingly the companies studied here have, and one company contact even expressed so explicitly, processes of enrolling actors that are *not* predetermined as being the appropriate actors a priory. These are network relationship building processes, which become a sort of supportive activity that can, but does not have to, be linked directly to the solution that is created. It is if to say that building networks and forging relations happens before the use of the network or relations is needed or mobilised.

But equally interesting is the case mentioned very late in the thesis (a fourth access2innovation case found pertinent to mention - WaterBySun) where there was a strong relation – an investor – but the investor constrained operations to a the degree where even new discoveries could not be included because the investor dictated proceedings and did not move away from the initial plan of the company; i.e. even when experiments seemed to suggest the company needed to pivot, the company was not able to because the investors wanted to stick to the original idea.

So, the analyses suggest that relations of companies that seem to be able to create solutions, include strong relations, but when the strong relation is the investor or funder, and the relation is *too* strong, it becomes a problem.

8.2 How do commercial actors develop solutions?

The processes of actors who try to create solutions in the context of uncertainty can be defined by how they make sense of the things they are trying to do and how they enrol others. The analyses in the thesis reveal that there are two camps; companies that have actually been able to create solutions and a company that has not.

The processes of creating solutions in the context of uncertainty, can be understood as a mixture of different activities:

- Actors that are *aware* of the difficulties that lie ahead (such as SystemTeknik) seem to be better prepared, as they are organised with strong relations, but with an outlook towards weak relations
- Actors that are *not* aware may overcome this lack of awareness (such as Sky-Watch), if the actor is able to quickly validate and experiment with the ideas and pivot the company if the experiments result in failure.
- The original ideas and the enrolment of funds are important in securing a starting point for the company, and these processes are related to fixed items, or noun-based actors: plans, budgets etc. (in all cases, including access2innovation)
- However, the processes after enrolling funding of those that are able to create solutions, are more closely linked to verb-based processes; experimenting, observing etc. *continually over time*.
- And when the processes reveal that an idea is poor or untenable, the actors change direction and find new ideas and form new experiments, which ostensibly lead to pivoting of ideas and business models (Sky-Watch and SystemTeknik – and not Remote Sanitation) – and crucially, the strong partners e.g. funders, are able to move along in new directions in the cases that prosper.

The process of creating solutions then could be suggested to follow that of SystemTeknik, which has been envisioned in this thesis as the following:

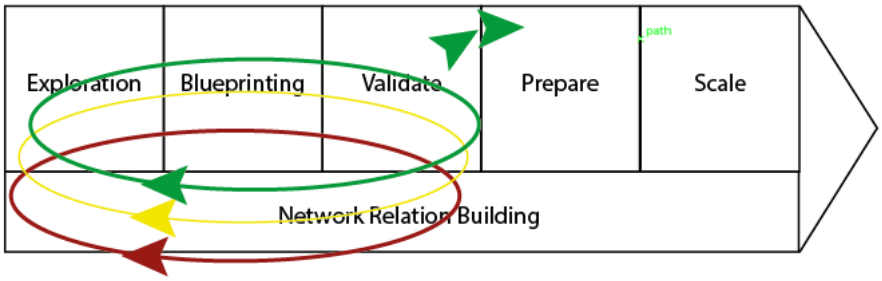


Figure 55: SystemTeknik process of creating solutions
Source: Own production

The learning circles of SystemTeknik are depicted as different relatively demarcated events (Fig. 55), where the red circle indicates the first potential project (a renewable energy generator) where the company had explored the idea with partners, tried to come up with solutions, validated solutions and throughout the process the company enrolled other actors. When a solution was found to be unviable, the project stopped (or was shelved), which can be understood as an actor that is subtracted from the processes of creating solutions. The next process (the yellow circle) was related to a Tanzania based NGO (MS ActionAid) who had some energy problems. There the company again explored potential solutions, blueprinted ideas with e.g. the NGO and validated the different solutions with e.g. the NGO. And again, when after many different attempts at finding a solution failed – the company stopped. Again, actors were first added and then subtracted. The next process (green circle) with the WWF in Uganda was a similar sort of process as the others, only here a solution was eventually found viable, and yet more funding was enrolled and a prototype was created and seemed to reach a point where it would be scalable. Only then did the company start building prototypes and artefacts, and make investments in materials etc.

Another case, Sky-Watch, showed similar sort of processes albeit with a seemingly less systematic approach. But the processes of enrolling actors and exploring other opportunities with new actors are clearly important when creating solutions in the context of uncertainty. However, letting go or halting ideas or projects when validated as unviable seems also to be important.

The single actor (Remote Sanitation), who seemed to fail at creating solutions in the context of uncertainty, may be an innovator in other contexts than uncertainty (e.g. in home markets), as his other home-based business ideas

would indeed suggest that he is, but in terms of uncertainty, his familiar way of doing business is not enough.

The embedded case studies reveal these main considerations:

The *facilitation of access2innovation* in terms of allowing Danish commercial enterprises access to the network of relations is valid. For companies this means that the processes of Network Relation Building can commence more readily, but that does not suggest that the potential relations provided by access2innovation will remain over time, as companies explore, blueprint and validate. And if the validation process reveals the intended solution with the network relation in question, is unviable, then both the solution and the relation are subtracted from the processes of the company. This will be explored more in the reflections at the end of the thesis.

The *funding* is a crucial element in projects. Funding is an enabler. It enables projects to initiate activities. But the manner of funding, which warrants further investigation, reveals the ability, or lack thereof, of the actors to pivot when an idea is found to be unviable or when there is a new opportunity to grasp. The successful actors here do receive funding, they test their original ideas by experimenting in different ways, find something that needs to change, and they are able to change direction of the company or project, because the funding is either provided with the explicit intent of learning, or is able to move with the changes. The commercial actor that was unable to create solutions in this study was unable to change his way of creating solutions. In other words, *creating solutions in the context of uncertainty requires funding, and especially movable funding*.

And as funding new business activities may be important, then funding could be perceived as a strong tie, but interestingly the more loosely understood funding is, the better opportunities there are for creating solutions in the context of uncertainty. A realisation that holds true for the commercial actors taking part in access2innovation projects.

The *type* of actors can be characterised by having both strong and weak relations. An ideal type business then is a company, which has something to build on, but is flexible enough to include new ideas.

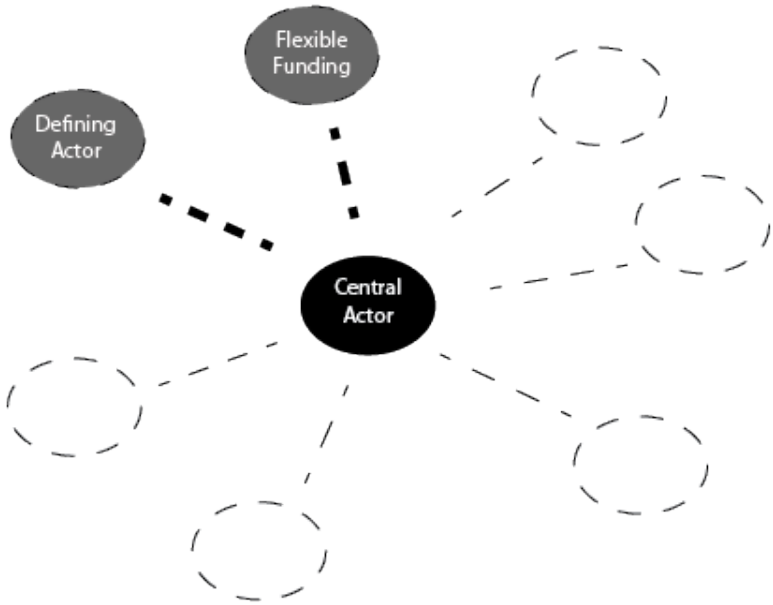


Figure 56: An ideal actor: There are both weak and strong relations, but the strong relations of the Defining Actors and Funding, are moveable
Source: Own production

The above generic figure exemplifies the constellation of actors who are able to create solutions. The blank actors are weak relations that only hold a peripheral relation to the Central Actor. A Defining Actor can limit the processes of the company, e.g. if the company sets out to create electrical solutions then that narrows the field of potential outcomes. But the Defining Actor is not fixed. It can be changed out for something else entirely. Flexible Funding is also a stronger actor in that it too can define the processes, but can move and change over time, as uncertainty is alleviated.

An ideal actor who participates in the pursuit of creating solutions in the context of uncertainty, who then can explore, blueprint and validate in a process perspective, is then:

A Central Actor (e.g. an entrepreneur or established company) with existing relations to other actors, which limit the field of potential outcomes. Relations include Defining Actors, Flexible Funding as well as other Loosely coupled relations or weaker relations that are added and subtracted over time. The processes of innovation that are rooted in existing technologies or other Defining Actors, stand a better chance of enrolling other actors, as it e.g. allows

for processes of experimentation and validation. A Defining Actor is a human or non-human relation that constrains the potential direction for the company to take, but it is also a Defining Actor that can change or move if a process of experimentation and validation suggests so. The ideal is also to enrol Flexible Funding. Funding must be moveable as uncertainty is alleviated and new findings require the business to pivot, and therefore requires the Funding to move with it.

The processes of creating solutions in the context of uncertainty seems to relate to the strong but malleable relations of actors, and indeed the blankness of the central actor to enrol other actors to inscribe meaning and attributes into the solution, which in turn allows for processes of experimentation and validation, from which other opportunities may arise. And by adding and subtracting actors over time new and more viable solutions emerge. The processes of actors that create solutions also included processes of engaging actors with no clear expectation that the actor will be valuable for the company. And as the context of uncertainty reveals situations where even great divergences from the initial ideas are needed, the ability of the strong relations to pivot and change holds the key to the success of the companies.

9 Reflections

This chapter hopes to draw out remaining and open discussions of the findings in this thesis work, in part to help inform particularly access2innovation, but also discuss the methodological challenges and to introduce other pertinent research areas.

9.1 Method reflections

The processes of action research were in hindsight not conducted with suitable awareness, as the reflection phases did not in a timely fashion yield new practices. For instance, the, rather late, realisations that the dogged focus on the business model tool did not work, should have led to new plans and actions. But in part because the funding given to access2innovation had been set to investigate how business models are formed, it seemed hard to let go. Or rather, it did not soon enough become apparent that something had to change.

This researcher may also have not appreciated the full scale and scope of action research to the needed degree to perform rigorous research. At least not in the beginning. This too led to a much too ad hoc approach to data collection in the beginning, and had there been more attention to the reflection phases the outcome of the thesis may have been different. In may be a contribution to action research that the experiences of handling this double role of action and researcher in what is arguably a complex situation. The job fulfilled by the author here was primarily that of a consultant of access2innovation, and the daily operations took on many interesting and sometimes rather overwhelming turn of events. There was always a strong focus on solving actual problems that have emerged in each of the different partnerships, where the activities of gathering data, reflecting on the facilitation processes and how they could be improved, was very difficult indeed.

The other activities of access2innovation, planning, action and reflection have not been studied here. And as the main portion of the data was collected for the purpose of viewing business models etc. AND that the actors did not adopt this way of business, can be argued to sort of not fit with an action research agenda. Sky-Watch was a case well explained by another researcher, and how the action research process unfolded, and it was a case that unfolded as intended (methodically speaking), but the practical results were not really what the access2innovation intended. The SystemTeknik case was about a

company, which fit the access2innovation idea of the 'ideal company', and there were few interspersed interactions between access2innovation consultants and this company, but by and large the company did not adhere or even demand the attention of access2innovation – in other words, the action research part of the research was not participatory as designed but rather anthropological. And finally, the case of Remote Sanitation may have been action research – and the case does show how the researcher addresses issues, forms new possible avenues of action with the entrepreneur, but the entrepreneur in question seemed not to adopt much, if any, of it. So, where the action research does provide a large portion of the data, it alone does not justify the conclusions in this thesis. This disparity was difficult to foresee in its entirety – particularly the part where very few of the initiatives purported by access2innovation, derived from research, led to influencing the activities of the actors.

Looking back through the thesis, a short remark was made in the Methodology chapter of experiential knowing, presentational knowing and propositional knowing as parts of what some researchers believe action research is about. Taking this second glance the experiential knowing seems significantly performed in the thesis, but the presentational knowing (conveying the findings) has been much harder to fulfil coherently both towards the participating actors during the access2innovation projects, and also presenting the findings for this thesis – something that will be improved in the next action research papers et al. The propositional knowing – what we can do about what we have learned, or the managerial guide-lines from the work in this thesis – seems to need some work; in part because the actors who we tried to influence during the processes of the access2innovation projects rarely adopted the propositions made by access2innovation, which then becomes a matter for future concern, as there seems to be a need to find new methods of identifying these propositions and the also to convey them.

There is also the matter of trying to provide a more discovery-driven inductive approach for this thesis, but seeing as much of the data essentially becomes close to secondary data (as the data was collected for another purpose than what the thesis eventually would focus on), some of the analyses have had a deductive-hypothetic reasoning. So, there have been a few times where the wheels have come off a bit. What could be said of the day-to-day work of this researcher is that it was an abductive approach, which is not unilaterally recognised as research, but as being simply pragmatic.

However, as this researcher was stumbling around the business model vernacular, wondering why actors did not appreciate it and the subsequent focus on sense making and enrolment, only came about because of the at

times less than ideal action research phases. In other words, breaking away from the causal approach to action research, e.g. an imaginary concept of "How do actors create business models, because that is what they should do, and because we in access2innovation have told them to do so" – did allow for a more pertinent line of inquiry, so although the rigor of the action research within the early years of this research can be questioned, it did produce an interesting line of inquiry.

Testing models empirically might also have been pertinent, but it would require there to something coherent to test. The existing models for development have not yielded any viable results in terms of sustainability – thus the appropriate perspectives must first be discovered – and then tested. This thesis has at best discovered a vocabulary and model that can make sense of the phenomena – later someone might test it.

9.2 Contributions to research

The following is compilation of the different research perspectives, which this thesis contributes to.

9.2.1 Entrepreneurship

Earlier this researcher delimited from focusing on entrepreneurship literature. However, the processes studied here are also that of entrepreneurship and could potentially have been more informative had the analyses taken such literature into account.

What the thesis still was able to contribute to the field of entrepreneurship, has been unique discussions of three different types of actors with three different journeys, enacting their sense making through different methods and capabilities. And these are journeys of actors who attempt to create solutions that are at the far edge of their existing experiences, with limited network relations to build from, in contexts that offer almost none of the familiar institutions that they otherwise may have come to rely on.

Another contribution to discussions of entrepreneurship is the nature of interaction between researcher and actors as part of the context of this thesis. Authors Mcmullen and Dimov (2013) purport that there are many concepts of the processes of entrepreneurship, but empirical evidence for these concepts are lacking. This thesis, even with the limitations of informing entrepreneurship literature directly, is a contribution to this. There is value

in the data provided in this thesis, which is akin to longitudinal studies where a researcher has been in close proximity to actors over time. This supplemented by data collected after activities have taken place where actors provide their own reflections of past events.

9.2.2 Discussions of markets in the developing world

The term 'markets' has been attempted to be defined somehow for this thesis, but it is, to this researcher, still not quite complete. There are even more ways of considering the term 'markets'; e.g. whole countries are markets of sorts, and there are most likely also markets that do not contribute to sustainable development etc.

There are no actual conclusions to draw from this, but the contributions of this thesis are especially that the term 'markets' are at the very least questionable and that more nuanced descriptors might need to be introduced.

In a different line of inquiry, it was revealed that *Market study approaches* are more or less pointless. An under-graduate student (Mikkelsen, at UCN, 2011) tried to ascertain what *market analysis tools* were applicable in the context of Ghana and found that none of them were. The idea of quantifying or qualifying market data is simply not reliable. Mikkelsen found that data could not be relied upon because sources were difficult to ascertain with any validity or reliability. The thesis then can concur in some respect to these conclusions in that companies that seek opportunities start out in one place but almost certainly end up in another, which in a way renders the processes of measuring markets (as market analyses tools do) obsolete.

Wu (2013) analysed if the marketing capabilities of emerging market firms had an influence on firm performance, and concluded that marketing capabilities influence performance more in more developed and individualistic economies. The nature of emerging markets is that people behave collectively and therefor make decisions together, and the marketing activities of companies do not affect the collective decision making process, to the extent it would in an individualistic culture; e.g. Europe. This study shows also that companies that tend to perform better do so, not for their ability to promote products in a marketplace, but rather to have social abilities of interaction with customers etc. This thesis can contribute to research in marketing by showing the layers of complexities of commercial actors who attempt to create solutions in different entrepreneurial processes and outcomes.

9.2.3 Innovation literature

Innovation literature was, as mentioned earlier, discussed by Ravn (2012) when dealing with access2innovation partnerships, and therefore not strictly relevant to revisit in this thesis. However, the processes the actors investigated here went through could very well have been sensitised by innovation literature. One of which is the Innovator's DNA (Christensen et al 2011) where characteristics of innovators include that they e.g. ask questions, network, observe and experiment – characteristics that this researcher can recognise in the activities of the actors studied in this thesis.

Product innovation processes such as Jin (2015) could make sense, and also another design school thinker such as Keskin (2015) who discusses the challenges of product-market alignments. But both would require there to be a product, or at least some idea of a product – something that comes very late in the overall innovation processes of access2innovation. Though it must be said that Keskin arrives at a conceptual model that is not that different from the one in this thesis, but the differences being the peripheral activities of networking outside pertinent line of inquiry is not observed by Keskin, and that particular thesis delves into matters of sustainability where there are products and markets – none of which are present in the context of this thesis.

This thesis then can contribute to innovation literature by adding a layer of understanding to a certain type of context of innovation, as the data can reveal how experiments with actors over time can be significant, and that the commercial product is only part of the innovation process. Or rather, the processes needed to create solutions where there are no products or markets, require actors to experiment with actors – human and non-human as well – over time, before any actual idea of a product is manifested. The processes in other words seem much more important than the products.

9.2.4 Other perspectives

There are in hindsight other perspectives that could be considered for the field of study here, e.g. *Goal theory* – the art of learning, by use of goals. This does seem compelling for the phenomenon studied here, but for it to make sense there must be goals, of which there were none in the access2innovation projects. At least not any with any durability.

Perception theory, as best as this researcher can comprehend this field of study, is a psychological perspective of what an actor *can* perceive. This would, and probably is close to what this thesis has done, although without directly speaking of psychology or perception theory. One short acknowledgement to this field of study is however mentioned in section 4.1.1 about Sorensen et al (2007).

What this thesis can contribute to these discussions is perhaps that creating solutions for complex social problems in a sustainable way could include studies of how actors perceive different events, and as this thesis attempts to show the sense making processes of actors and how they choose to enact these perceptions, the depth of the data here could be valuable.

9.2.5 Unknown field of study

This part of the thesis does most likely not detail something that is unknown to research – only that the researcher does not know under which field of study it could be best investigated.

An event that took place in the earliest of days of access2innovation 2.0 where this researcher visited Uganda for the first time. The event did not really strike as something important at the time, but looking back it might have been an important revelation. But, as mentioned, this researcher does not know what field of study it could fall into:

A Ugandan farmer, his family and helpers, spoke with this Danish researcher and the researcher's fellow travellers from Denmark (two companies, an NGO and a Council member). The farmer was asked if there was anything particular he needed to grow crops sustainably to improve the lives of his family and help him have a more stable income. The processes yielded three main concerns:

1. The farmer had problems with *water supply*. He could not really improve the farming, for instance by use of fertilisers, because the fertiliser would go bad if no water was added, because heat breaks down the fertiliser. A solution to bring water to his farm was very much a dire need.
2. The farmer also mentions that he needs a *dry storage facility*, because the waste of crop going bad from lying on the ground was hurting him. Moisture, insects etc. would leave much of the crop spoiled and useless.
3. And finally, a *transportation solution* for taking products to market was critical, because current methods of transport might include a

> bicycle, it takes too long, spoils some crop, and leaves no flexibility in terms of getting to market on time, reaching whole sellers etc.

So here are three problems. And the companies participating in the talks might see these as opportunities – as is the main thrust of the access2innovation design.

Later one company did look back at the farmer and say: "You know what? We think we have a water solution for you. We will even make it so that you do not have to pay for it in full when you get it. Pay by instalments over x years".

This is where the access2innovation project and idea comes good and reaches one of its main operating goals.

But the goal is not reached for the farmer, and the reason is painfully simple:

For the farmer to reach any sort of foreseeable stability and likelihood of making any significant change to his farm he would need to have all his problems solved – *at the same time*. So, the water solution would certainly help, but could he really – sustainably – pay for it? Well, no. Because he still had the problem of much of his crop are wasted from lying on the ground, and he still couldn't get to market without a vehicle with any regularity and therefore not become a supplier to customers and build relations. He would potentially be worse off from having to pay the little funds he could manage to get for a water supply that for the time being did not truly pay off. To pay for the new solutions he would need all three of his problems to be solved *at the same time*. It would seem that for sustainability to take hold efforts of initiatives such as access2innovation must join forces with even more actors, as many solutions must be created at the same time.

This realisation coupled with the findings of this thesis, e.g. that the processes are at least as, if not more, important than the products or services when trying to create solutions in the context of uncertainty, could make for a daunting task. This researcher could imagine that the experimentation with actors over time when there is only one company to contend with, would become exponentially more complex for every extra company that needs to be considered, who also has to experiment with actors etc. etc., and whom should partner with other companies with other products and services to make sure that farmers, as the one in the story here, are able to acquire what is needed to create more sustainable farming – at the same time. Maybe the expression on this being part of an unknown field of study should be about identifying the appropriate 'fields of studies', as there arguably would be many – studies and depth of understanding of researchers that might also have to come up with viable solutions – at the same time.

These considerations could be valuable when creating new partnership strategies for sustainable development.

9.3 Reflections on the access2innovation model

In terms of facilitation of access2innovation there are reasons to conclude that the facilitation between e.g. NGOs and Industry can become fruitful. But the processes of the commercial actors reveal that those with a propensity to create solutions do so by *innovating*. And the fruitfulness of the innovation processes seems to be very closely linked to the strength of relations of the actors, and the activities of forging new relations, and not purely the innovation activities themselves, nor, and this is the important part, the relations provided by access2innovation.

It could be suggested that for future access2innovation projects to come closer to creating solutions in the context of uncertainty, through discussing different market orientation approaches, with the goal of solving complex social problems profitably, is a matter of *recruiting the right type* of actors: the innovative actors; actors who are able to experiment and pivot their business models if needed. And indeed, actors that have context and permit other actors to inscribe attributes to the solution. It is very clear from the case of SystemTeknik studied here, that:

- This company in fact resembles the sort of company originally envisioned to be enrolled into the access2innovation projects.
- It is a company that has resources and experiences to draw from.
- It is a company that has explicitly said that they joined the access2innovation program, *not* for the funding made available to them through access2innovation, but because of the network of relations for them to tap into.
- It could be said that the company not only is *able to learn* – they are even *aware* of it.

It would be valuable to uncover who, how, what and when other such actors could be enrolled to access2innovation.

The access2innovation *funding* of the actors who take part in the projects, should also be investigated. From an idealist's point of view, it could be argued that the value that access2innovation is able to deliver; i.e. the network and facilitated activities, should be of such quality, so that other

actors would like to join in without access2innovation having to lure them with funding?

What is also becoming clearer through the thesis work of Ravn (2012) related to access2innovation version 1.0 and this thesis of access2innovation version 2.0 is that *understanding of what "a network" is.* From the perspective of companies, the network of relations that can be afforded through access2innovation is a *suitable place to start*, but the relations formed by access2innovation between companies and especially NGOs never endure. The companies in all cases have processes of engaging NGOs and later leaving them again.

Networks *are* not – they become. As has been mentioned in the introduction of the thesis, the ethos of access2innovation is based on the main idea that actors looking for opportunities in places like Sub-Saharan Africa, will be more likely to take steps if there are network relations. But the idea that the *pre-fabricated network relations provided by access2innovation* are to endure over time is proven in most circumstances to be invalid. Commercial actors, as well as any other actor, will have to *create* their own relationships. And the access2innovation program might have to reconfigure to allow for this to happen.

There are other future research projects to consider related to the context of access2innovation or similar:

- Maybe there is value in coming to a greater understanding of what it means to *pivot*?

Pivoting has been discussed in this thesis as a process of companies where the actors test their ideas, and when new knowledge is created (the companies learn) they might have to pivot; i.e. change how they do business or the product. It is relatively clear in a few of the cases studied here that the companies are able to change direction and how they do things, but what about NGOs? Or research for that matter? Or government?

If, as conjectured here, the possibility of creating sustainable solutions for complex social problems is linked to the ability of actors to pivot, could it be possible that solutions are readily more obtainable if all sectors could pivot? Could an NGO for instance, experiment and learn what works and what does not in partnerships with companies and others, and change e.g. its business model?

- Another aspect related to the *nature of funding*.

As with the cases here, the complexity of trying to create solutions in the context of uncertainty requires funding to be flexible as there is a significant learning curve, and ostensibly requirements of actors to pivot, so too is access2innovation in a learning curve. But the funding appropriated to access2innovation is not flexible as such. The access2innovation does stumble upon new interesting things from time to time, but the opportunities that do not fit precisely with the original model access2innovation cannot be considered, because the nature of funding and the deliverables that particularly government funding requires.

Could it be possible to explore alternate forms of government funding?

- Ultimately the model of access2innovation as a vehicle and facilitator of activities that hope to help shape new solutions for complex social problems – is in need of revision.

The access2innovation program has from its very beginning struggled with enrolling actors to the program. This is clear in how difficult it has been to locate and motivate companies, the likes of SystemTeknik, to the program. And process theory and others from this thesis allow for a strong hypothesis of why this problem persists: access2innovation is not blank!

The access2innovation program has processes of enrolling actors, but the processes are defined by noun based actors: there is a plan and a model, and if other actors do not conform to this model precisely, then they cannot take part.

If, however, the program was less a program, and more an incubator which meshes actors, activities and interests, from which funding is enrolled *when* ideas have endured processes of exploration, blueprinting, validation and networking, then complex social problems might be solved more readily – and sustainably.

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11 Appendices

11.1 Interviews

#	Attendees	Date
1	Tanzanian business man (Danish national), Bjarne Laustsen	25/05/11
2	TaTeDO (Tanzanian NGO moving into private business)	26/05/11
3	CEO Bressendorf of Bressendorf Ltd.	01/06/11
4	CEO of Vibocold	10/08/11
5	CEO and Supply Chain manager of Urtekram	11/08/11
6	CEO Jørgen Kollerup, Fanmilk	12/08/11
7	Marketing Director Mogens Poulsen, Thise Mejeri	15/08/11
8	Projectmanager, Novozymes (Cleanstar)	18/08/11
9	CEO Nissen, Aurion	26/10/11
10	Director Jørgen Løgstrup, Rootzone	18/11/11
11	NGO Kickstart (in Tanzania)	14/12/11
12	Bo Hansen, Danish Chicken farmer about Tanzania	06/03/12
13	CEO and Supply Chain manager of Urtekram (again)	11/04/12
14	Axel Eimar, IST, Dar es Salaam, Tanzania	19/04/12
15	Researcher Niels Heine Kristensen, Copenhagen University	29/08/12

16	Managers of United Crane Creamers Cooperative Uganda	07/12/12
17	CEO of Sky-Watch, Jonas Dyhr Johansen	02/01/13
18	Project managers Frederikshavn Municipality (food program in Tanzania)	11/03/13
19	CEO and Sales Manager of Shares, Uganda	07/05/13
20	FarmMountain CEO, Lars Bendix, Consultant Henrik Anker-Ladefoged and representatives of Seniors without Borders	01/08/13
21	CEO Carsten Ingemann, SystemTeknik	11/03/14
22	Director of Remote Sanitation, Anders Risager*	10/06/14
23	access2innovation manager Dr. Jacob Ravn, 2014	20/08/14

Interviews and meetings
* transcribed below "Transcription A" as exemplar

11.2 Field notes

Notes taken during activities with actors.

Action research based interaction and consultancies with Anders Risager, **Remote Sanitation**, ca. 200 hours:

- Visit to Tanzania
- Consulting with Anders over the different business ideas
- Meetings between Remote Sanitation, the Danish Red Cross and access2innovation
- Weekly or bi-weekly encounters over the course of three years as a consultant.

Action research based interaction and consultancies with **SystemTeknik**, ca. 40 hours:

- Visit to Tanzania
- Consulting with SystemTeknik about the board lines of the different ideas, specifically related to going to Tanzania

- Performing the trip it self to Tanzania, with daily meetings, including a summary meeting each evening over dinner.
- Upon returning home a debrief interview was conducted as a formality.
- Two sporadic meetings were set up with Christian who worked at SystemTeknik about creating a business model for the ideas.
- SystemTeknik also attended access2innovation seminars on different other opportunities.

Other access2innovation activities not specifically related to the thesis, but also not completely detached either:

2011 – 2013
access2innovation network trips to East Africa
access2innovation Steering and Resource committee meetings
Meetings with the Confederation of Danish Industry (partners)

2011
Initiating meeting with CARE
UN Procurement Conference, New York, USA

2012
access2innovation seminar on renewable energy potentials in ssa
Danish Ministry of Foreign Affairs, company screening process
UC Davis seminar and workshops in Davis, USA

2013
Danish Ministry of Foreign Affairs, speaker, conference
on social entrepreneurship [35]

2013
OIKOS Young Scholars Academy, UNDP, Istanbul, Turkey[36]

2014
Sustainable Innovation Conference, speaker, Epsom, UK[37]

[35] http://um.dk/da/news/newsdisplaypage/?newsID=E1B84E7E-F084-4726-B075-4864D0020B96
[36] http://oikos-international.org/programmes/conferences/development/
[37] http://cfsd.org.uk/events/sustainable-innovation-2013/

11.3 Transcription of interviews

Transcription A

10. June 2014
Interviewer: Ivan Butler (I)
Respondent: Anders Risager (A)
(Recording not commenced at beginning of the dialogue, and some disturbances muddied some answers. The following is a run down of any and all reflections of some relevance to this thesis.)

I: "Så godt som du kan huske det, hvorfor tog du til Tanzania, i sin tid? Hvad var det der gjorde…ja, du må hellere selv fortælle det"

A: "Jamen dels så var det ferie. Og så var det for at se om der var forretningsmuligheder derude. Jeg havde en ide om at der ville komme til at ske noget spændende med den udvikling derude, der bliver rigtig interessant."

I: "Hvor tog du hen i Tanzania, og hvorfor tog du derhen?"

A: "I første omgang før den tur du var med… men der rejste jeg rundt på må og få for at finde ud af hvad der foregår der, og så var jeg ved Kilimanjaro og gå rundt (…) hvad er det i det hele taget… jeg har havde ikke været i Afrika før."

I: "Kunne man sige at du ved Kilimanjaro for noget andet en forretning… der var vist noget med et bjerg der skulle bestiges?"

A: "Jo jo … he he he "

I: "Det er jo interessant fordi meget forretningsproces kan været drevet af en forretningside, men det kan lige så meget være noget man oplever i det private som så … Nå men da du så kommer med vores tur der havde du selv .. vi må hellere lade som om at jeg ikke er blandet ind i det så meget … forskningsmæssigt…. Hvorfor… du tog til Tanzania der i '11."

A: "Første gang var i ´09, og i '10, og så '11 og '12. Det avr vist 4 år i træk, og så har jeg været i Uganda her i…. '13. Hmm har jeg sprunget et år over? Nå det også lige meget.. Jeg har været dernede nogle gange. "

I: …

A:…

A: ”Har en bekendt som har en veninde som bor i Mwanza. Hun vidste hvad jeg gik of rodede med. Og hun manglende kontakter. Og Nina satte mig i kontakt med det børnehjem. Havde været dernede en gang før. Hvorfor Torben? Det er et godt spørgsmål. Torben har en helt anden baggrund – (som Anders ikke kan huske). Noget økonomi, forretningsudvikling… tidligere IT. Kender ham som konsulent for 15 år siden. Han var rigtig god til at omsætte praktisk viden, ”jeg havde fornemmelsen af at han forstod det.. at han kunne lave det til noget man kunne bruge til noget” Det er derfor jeg ansatte Torben 10 år senere… Torben havde ikke branchekendskab. Det han ku’ var at han kunne forstå branchen. IT har han styr på. Verner og jeg ansatte Torben da vi ikke selv havde ressourcer til dagligt at løbe en ny forretning i gang. Hvorfor AquaPlanning? Hvorfor vand? Noget der gav dybere mening. Legeplads. Fedt at gå sammen nogle stykker med praktisk baggrund. Vand, var udfra deres praktiske baggrund. Det var for at tjene penge. Lærte du noget af det? Åhhh det kan jeg ikke lige sætte fingeren på… Torben viste sig ikke helt til at udfylde sin opgave med at fylde turen ud.”

(Note: Jeg, Ivan, prikker til ham. Jeg lægger mærke til at han ser TCDC som kunde, og ikke som udviklingspartner, hvad vi ellers havde lagt op til. Grundlæggende husker Anders ikke frygteligt meget.)

A: ”tv inspektion ide lægges på hylden pga manglende økonomi…derefter installatør ide via en lokal dansk plus Dalgaard, selvom han er en gangster. troværdighed var ikke Dalgaard. Holder ikke aftaler – så tillid var lav. ”

(Note: Anders siger at han kunne kun drive sin egen virksomhed… han er bundet af en eksisterende forretning.
Han har antagelser om store behov men ingen reel viden om dem. F.eks. decentral spildevandsløsning. ”Jeg synes det er åbenlyst”)

A: ”…tændt af den hellige ild. Vi havde ikke forstået til bunds hvad der var behov for.
Vi var simpelthen ting vi tog forgivet. F.eks. at grave et hul i jorden på en klippe eller at ting skal kunne flyttes med menneskehænder. Verner var ikke så meget med… han lavede nogle skitser… ”

I: (jeg spørger ind til processen med Dansk Røde Kors og den ide der arbejdes med)

A: ”Tegnet, testet, prøvet noget af… Vi tegnede lidt på det, men det gik i sig selv og Røde Kors pressede ikke på for at finde en løsning OG jeg var travlt optaget af min primære virksomhed. Foråret 2013 Røde Kors vil gerne lave noget, og midler fra access2innovation hjalp til med at få projekt i gang. DRK vil faktisk gerne købe det… Forpligtelser? Jesper fra DRK er også en del af et netværk i sig selv hvor han skal søge legitimitet til at lave projekt med Anders. ”

(Note: Anders siger i øvrigt ofte ”vi” men det virker mest som om at der kun er Anders…)

A: ”Det har aldrig været hensigten fra starten at drive entreprenørforretning, men krisen bevirkede at det blev hands-on og praktisk opgaveløsning, og målet om at lave en forretning som kan håndtere det administrative blev skudt til hjørne. ”

(Anders fortæller at han sælger sin primære virksomhed for at have fokus på ny projekter. At han var mæt. Det var ikke spændende.)

I: ”Du har også haft studerende med i projekterne… ”

A: ”Brugt studerende… spændende men krævende. Vil (fremover) bruge flere ressourcer på den næste studerende. Bevidst om at den studerende ikke fik den bedste opmærksomhed. ”

I: ”Hvad er motivation for at tage studerende ind? ”

A: ”Nye input… Men mangler retning… point of passage… så Simon var sat til at løse en opgave som han fortolkede anderledes (end Anders). ”

(Note. Enrolment var ikke helt sammenstillende..)

A: ”Når det går langsomt med at få prøvet tingene af…”

(Note. AquaPlanning var et bricolage uden retning.. et skrækkeligt rod. Burde have lagt en plan om hvor de ville hen. Burde være mere selv til stede… har haft alt for stor tillid til at andre folk kan udføre bestemte opgaver. Jeg fortolker det som: ”Bare personalet er billigt så går det nok alt sammen”.)

A: ”Et par uger hvor vi har sat os ned og lavet den vision var nok givet godt ud”

A: "Der er mange ting der ændrer sig… det kan godt være jeg er letantændelig og jeg igen kaster mig ud i noget jeg ikke har overvejet, men jeg vil gøre mit bedste for at sætte mig ned og overveje det inden jeg går i gang, selvom det ser spændende ud. Og så vil jeg overveje de ressourcer der skal i, både tid og økonomi, inden jeg går videre." Er det en proces som du vil stå med alene eller sammen med andre? "Noget af det vil jeg gøre alene, fordi hvis jeg ikke selv er enig med mig selv om at det er det rigtige at gøre så har jeg ikke energi til det bagefter. Hvis jeg hele tiden går og er i tvivl om at jeg har taget den rigtige beslutning så er det noget rod"

A: "Teknologisk Institut, videnkupon, noget af de dyreste kr. 100.000 der er brugt. De (Teknologisk Institut) smed skitserne væk og ville lave noget der dur. De lover at de færdige med noget i løbet af 2 måneder. Det er ikke afsluttet.. det de er kommet med er så dårligt at jeg kunne have slået det op fra min lære ude fra AMU centeret. Mens vi har ventet så har vi sat processen i stå…fordi det der kommer (fra instituttet) skal jo virke, og det regnede jeg med, men det der er kommet er komplet ubrugeligt."

A: "Burde have taget den første og den bedste indskydelse og skruet den sammen. Det kunne godt være at vi selv skulle betale for det, men så havde vi kommet så meget længere med vores produkt som vi er nu"

A: "Retrospektivt har det været tosset at skrive alle de ansøgninger, det er så tosset fordi ingen af dem er gået igennem. Havde de gået igennem ville meningen nok være en anden… Burde have sparket noget sammen… "

A: "Usikkerheden i det tekniske kunne været håndteret på en anden måde. Gør det selv. Det vi også kalder et eksperiment"

I: "Har du eksperimenteret andre steder? "

A: "Ja… f.eks. faktura indtastning versus smart programmering… Og så er der igen der vil afgive faktura data… "

"Vil til enhver tid at prøve ting af.. måske markedsføre noget selvom det ikke findes for at se om det får en respons. "

"Hvis det er tre ting:

- er det noget jeg vil.. bruge en ekstra uge på at mærke efter
- finde ressourcer
- når man er i gang så prøv tingene af i en fart. "

”I begge tilfælde har jeg forsøgt at lave en forretning som er anderledes end de kendte. Catering var landsdækkende, med mad eet sted fra, til større events. Det er en anden disciplin om logistik end madlavning. ”
”Kloak var at løse administrative og kommunikationsopgaver… ”
”Bliver tændt af noget nyt så snart man går i gang med noget. ”

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SUMMARY

The Ph.D. thesis work has been conducted in collaboration with access2innovation.com, Aalborg University and University College of Northern Denmark. The purpose of the thesis is to inform wider discussions of how commercial instruments can be utilised in the pursuit of solving complex social problems in developing countries, profitably.

The thesis is a process study of commercial companies in order to learn how they make sense and organize solutions over time. Three cases taken from the access2innovation program are studied. The hypothesis guiding the research suggests that companies who attempt to create solutions must reach outside the company, by enrolling (adding and subtracting) actors over time, for viable solutions to emerge.

The conclusion of the project suggests that companies that are able to create solutions, do so by having relations to defining actors. Defining actors narrow the agenda, which increases the speed by which experiments are conducted, and experiments are crucial as part of the learning processes needed in order to find viable solutions. But another issue seems pertinent: the ability of the defining actors to change or move when the experiments fail.

The results are particularly relevant for other programs looking to leverage the capabilities of commercial companies as part of the overall agenda of solving complex social problems in developing countries.

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